The NEW ZEALAND JOURNAL OF AGRICULTURE

Vol. 65. WELLINGTON, JULY 15, 1942. No. 1.

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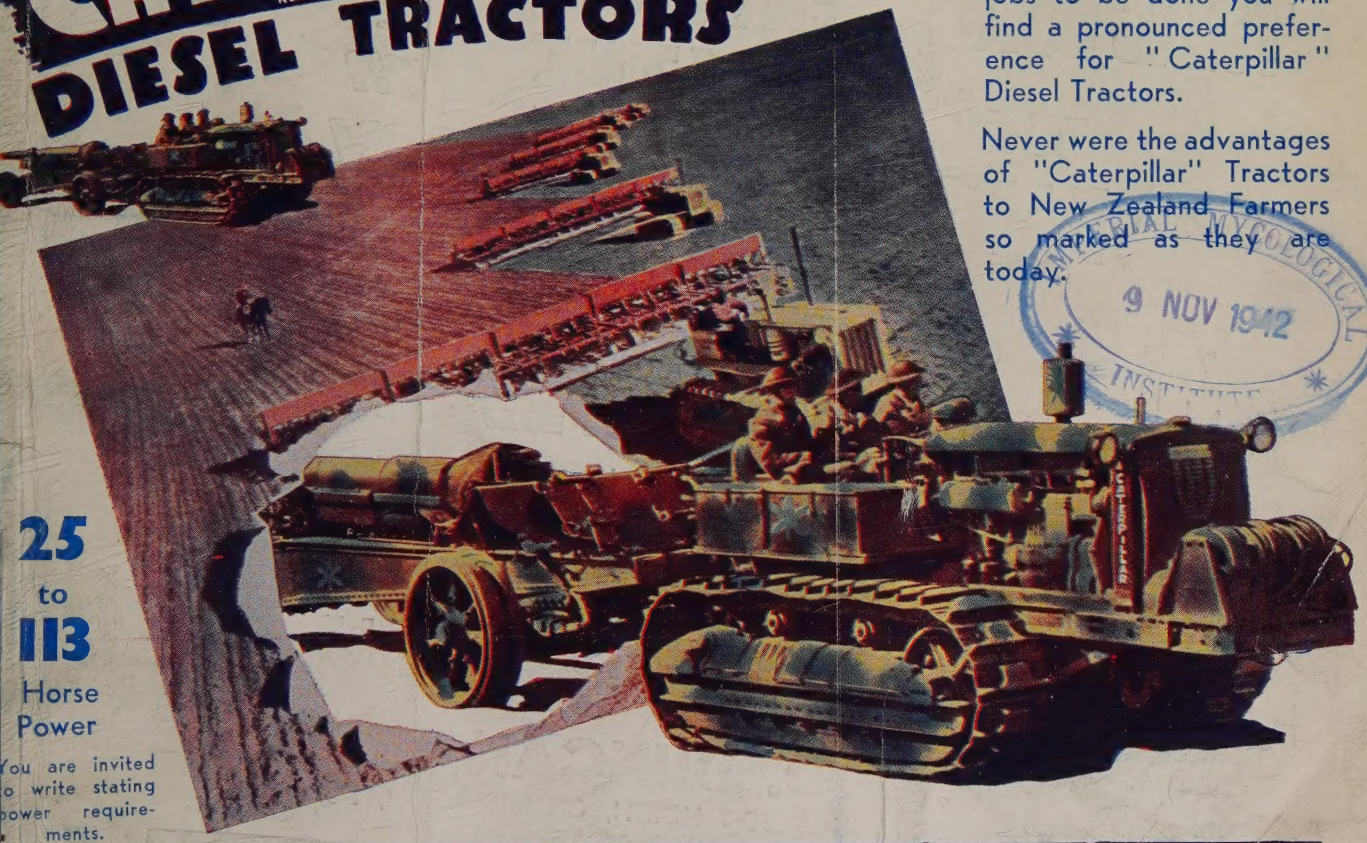

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THE NEW ZEALAND
JOURNAL OF AGRICULTURE

Vol. 65. No. 1.
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If the milking machine is to continue to serve the dairy farmer during the war, every effort must be made to conserve rubberware. The alternative may be hand-milking. In this article an outline is given of the regulations which govern buying of new milking machines or parts, but in addition to the carrying out of the regulations, it is the prime duty of all to see that every rubber fitting by proper cleaning and attention is made to last as long as possible.

Conservation of Rubber

BECAUSE of the quantities of rubberware required to equip the milking machines, the dairy industry is one of the largest users of rubber in New Zealand. Consequently, any saving which can be made is of vital importance and practices which have been generally regarded as essential in the past may have to be reconsidered.

The necessities of the position today require that rubber be kept in use as long as possible, and there is little doubt that with proper care, the life of a large percentage of the rubber fittings on a milking machine can be extended very considerably.

The instructions dealing with the care of rubber in the June issue gave a very brief statement covering the caustic soda-boiling water system of washing the interior of a milking plant and stressed the necessity of removing all traces of dirt and grease from the outside. The system is not new. It has been adopted after trials of many others, all of which have been found wanting.

What Can Be Done

Since these instructions were published, the following report has been received by the Director of the Dairy Division, and is quoted as an indication of what can be done to prolong the life of rubberware:—

"*Date of inspection*: May 27th, 1942.
Size of plant: 5-cow.
Shed: Clean.
Machine: Clean.
Grade of milk: First grade.
Remarks: The machine used by this sharemilker is the cleanest that has been inspected for some time. Although the machine is large, a 12-gallon copper is used for the supply of boiling water. The caustic soda and boiling water system of cleaning is used. The long and top rubbers have been in use for two years and the claw rubbers and hard inflations one year, eleflator inflation one year and are in perfect condition and suitable for much further use."

It will be noted that the caustic soda method of cleaning was used and that the only means of heating the water was a copper. Provided it is used regularly and at the right temperature, there is no better method of heating.

Six Simple Rules

There are six simple rules which should be followed in washing a milking plant.

1. It must be done immediately the milking is finished, so that the milk and dirt will have no chance to dry on.
2. The first rinse water should not be above the temperature of freshly drawn milk.
3. The caustic soda solution should be as near boiling point as possible when the cups are immersed in it to draw it through the machine.
4. The clean rinse water following should be at the same temperature.
5. The quantity of each of the above should be at least one gallon to each set of cups.

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6. The dirt, milk and grease should be thoroughly washed from the outside of the milk tubes and cups.

Carried out thoroughly and at every milking, this procedure will take less time than a careless rinse followed by periodical dismantling. It will produce better milk and extend the life of the rubberware.

The advantages gained by thorough cleaning, apart from the quality of the milk, are two-fold. The life of the rubberware is extended, and it will prolong the condition which will give rapid and clean milking although under present conditions it will be necessary to use it longer than would be done in normal times.

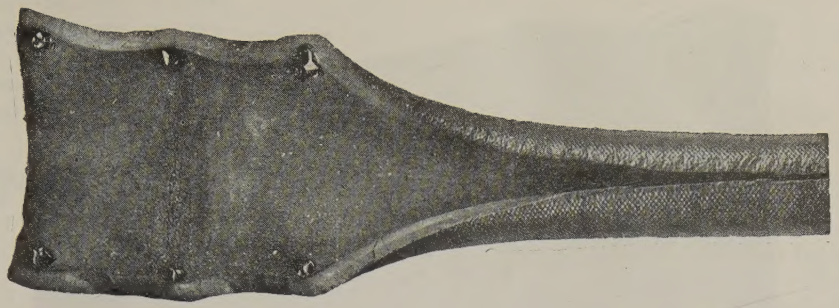
The Alternative

It cannot be too forcibly impressed that since no one can forecast the duration of the war, nor the time when supplies of rubber or substitutes for rubber will be available after the war, it is imperative that the utmost economy must be practised in the use of the present stocks. This will certainly entail using milking machine rubberware for longer periods than were previously considered safe, and in order to minimise the harmful effects of this practice every care must be taken to prevent deterioration in the rubberware. Farmers are therefore urged to follow carefully the advice given in the June issue concerning the care of rubberware. The alternative to rubber conservation may well be reversion to hand milking.

Control measures which have been considered necessary are covered by the Milking Machine Control Order, 1942, which came into force on the 22nd day of May, and was followed by two amendments which came into force on the 29th May and 12th June respectively.

The first two cover the following points:—

1. Any person wishing to purchase a new or used milking machine must first obtain a permit from the Farm Dairy Instructor in his district.



Claw tube rubber showing indentations caused by the lodgment of grease.

2. No person may purchase or otherwise acquire new parts for his milking machine without a permit except metal parts which are exclusively renewal or replacement of metal parts of his present machine.

3. No person may sell or erect a new or a used milking machine or parts for a milking machine except under the above conditions and unless a permit in writing is produced to him by the purchaser.

Reserves for Future

These provisions mean that all sales of new or used milking machines or reconstructions of existing plants are prohibited except under permit. It is customary when an existing plant is replaced by a new one, when it is reconstructed or even when fitting new attachments for various purposes, to provide new rubberware also, even though all or a large portion of the rubberware on the old plant is still useable. The result of the order and amendment No. 1 will be to save both rubber and metal, and, while it may be contended that the material for the

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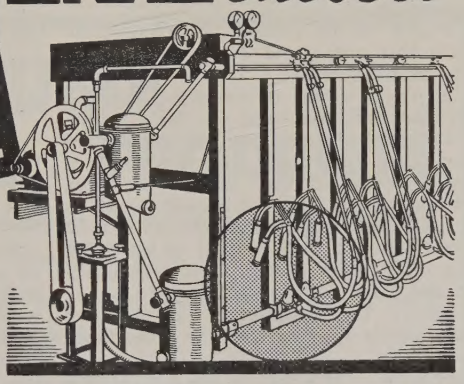

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new season's installations is already manufactured, it is considered necessary to keep it in reserve to meet future requirements.

In short, the purpose of the order and amendment No. 1 is to keep all milking plants which are still useable or can be made useable, even if not one hundred per cent. efficient, in operation.

Points to be noted in connection with this order and No. 1 amendment are as follows:—

A plant which is already "doubled-up" can still be used on that system.

Except in exceptional circumstances and only then with the approval of the Director of the Dairy Division, "doubling-up" will not be approved on a plant already installed, or a new plant or on a replacement of an existing plant even if the plant previously in use was "doubled-up."

Where the installation of a new machine is approved, a low level plant may be installed, but if of the "doubled-up" type, only one set of teat cups for each bail will be allowed.

"Doubling-up" by the use of sets of cups already owned or procured without the authority of the inspector would be a contravention of amendment No. 1 which debars the use of any metal part which is an extension or duplication or stand by or spare part and legal action could be taken in such cases.

Conversion of Machines

No conversion of a high level machine to a low level machine will be approved if the conversion entails the use of new parts to replace old parts which are in useable condition.

No new installation will be approved in a hand milking shed where less than 20 cows are milked, or in one where more than 20 cows are milked if a hand milker to every 8 cows is available, unless with the approval of the supervising officer.

No permit will be required where an existing plant is sold with the farm to the new owner.

Sales of used plant may be made privately or by auction to a dealer for resale or to a buyer who can produce a permit to purchase.

Suppliers of milk for local consumption should apply to the dairy inspector or the inspector of stock for permits to purchase.

Excess Purchases

The Milking Machine Control Order 1942 Amendment No. 1 aims at the conservation of both metals and rubber. The purpose of Amendment No. 2 is to make available t users the quantity of rubbe ware really needed to kee the milking plant in operatio on each farm and preven excess purchases which, i view of the fifty per cen restriction on manufacture would result in some user being kept without thei actual requirements. Should it fail in its object, it may be necessary to require a return of stocks to be made by all users and distributors and a calling in of any excess fo re-distribution.

Under Amendment No. 2 no occupier of a dairy shall purchase and no person shall sell to an occupier any rubberware if the quantity so purchased and sold brings the quantity held by the purchaser up to a quantity in excess of his allowance as set out in the schedule shown in the amendment.

Exclusive of rubberware attached to the machine, stocks which can be held in any dairy are as follows:—

(*a*) Sufficient air and milk dropper rubberware for one bail.

(*b*) Sufficient claw rubbers for every bail.

(*c*) Sufficent soft inflations for every bail.

(*d*) Sufficient moulded inflations for one bail.

The responsibility for complying with the schedule rests in the first instance on the purchaser who is required to deliver to the seller at the time of purchase a signed, written order "setting out the quantity and description of the rubberware sought to be acquired and to satisfy the vendor that the purchase of the rubberware mentioned in the purchaser's order is permitted by clause 6 of Amendment No. 2."

Clause 8 requires the vendor to file the orders referred to above for twelve months following the sale and to make them available for inspection at all reasonable times to an inspector.

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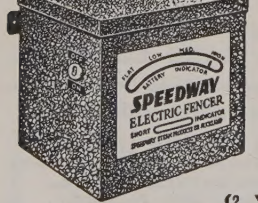

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Linen Flax is now an established crop in New Zealand, and although it is being grown successfully in several districts, there are wiseacres who say "It can't last; it will exhaust the soil." Perhaps it will, if the same areas are cropped for several years in succession, but in this respect linen flax is by no means a unique offender. This article surveys the position as far as New Zealand experience will take it, and the answer is definitely, "These forebodings are groundless."

DOES LINEN FLAX EXHAUST THE SOIL?

R. P. CONNELL,
Fields Superintendent,
Christchurch

THE view has been expressed that a linen flax crop has a specially detrimental influence upon other crops grown subsequently on the same land. The origin of this view is obscure. It cannot be based on any extensive New Zealand experience, because there was very little background of experience with linen flax in New Zealand when the view was first advanced. Possibly the contention that linen flax exhausts the soil to an unusual extent is based on traditional beliefs that British farmers have had about linseed, although they are not entertained by well informed British authorities.

For instance, the authoritative "Farm Crops" of the Gresham Publishing Co. states: "At one time it was widely held that linseed was a very exhausting crop imposing a heavy draft on the land, but this has not been supported by recent experiments, and it is significant that in those districts where the crop has been grown regularly for many years no such belief exists."

So much for overseas traditional beliefs. To clarify the local position as far as possible a stocktaking has been made in Canterbury and Marlborough, where the field officers were asked the question, "Does linen flax specially exhaust the soil or prejudice success with the following crop?"

Before citing the answers, it seems well to record that linen flax is expected to lower the stores of plant food substances just as does wheat or oats or barley. The point really to be decided is whether linen flax is harder on the land than such crops, or does it leave the ground with less productive capacity than the crops just named.

Results of Experience

The following answers represent the experience and observations of officers in the field:—

Mr. W. C. Stafford, Timaru:—

It is assumed that the question, "Does linen flax exhaust the soil or prejudice success with following crops?" arises from the opinion held by many of the older farmers that a crop of linseed was detrimental to the

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This crop of red clover was drilled with linen flax last year. Earlier hay cut is stacked in the background.

soil, although it was quite a recognised practice to follow linseed with wheat and to expect a good crop.

South Canterbury crops following linen flax have in the main done quite well, and while there have been failures, the weight of evidence is that a crop of linen flax is no harder on soil than any of the cereal crops. Linen flax has been followed by wheat, oats, grass, perennial and Italian ryegrass for seed, and rape for seed, and these crops have yielded above the average.

Mr. J. G. McKay, Christchurch:—

On one season's experience in the Leeston district there appears to be no definite evidence that linen flax has exhausted the soil. On the contrary, where wheat has followed flax in land ploughed out of grass, yields of up to 65 bushels per acre have been obtained, one farmer stating that his record yield for the farm was obtained this season under the conditions mentioned above.

Comparisons

Where comparisons have been possible such as where wheat has been grown after peas and flax in the same paddock, wheat crops are reported to have done as well after one as the other. Wheat after grass and after flax in the same paddock appears to have done at least equally well on both areas and autumn barley in one instance was observed to have made rather better growth after flax than after peas.

Mr. G. K. McPherson, Ashburton:—

In Ashburton County certainly there were no failures, to my knowledge, where wheat followed flax and any crops of such wheat which I saw did not appear to be adversely affected as the result of the land pr viously having grown a fl crop. There were several i stances where part of a pa dock was in flax and part i some other crop and subs quently the whole of th paddock was sown in the on crop. In general there wer no visible differences betwee the part of this crop on lan previously in flax and th part previously in some othe crop. However, the followin instances were exceptions:-

1. Part paddock flax, re mainder wheat, whole pad dock later sown in peas—th peas on wheat ground wer superior to the peas on th flax ground.

2. Part paddock flax, bal ance grass, whole paddoc then sown in wheat—whea on flax ground superior t wheat on grass area.

3. Part paddock flax, re mainder wheat, whole pad dock then sown in oats an lupins for green feed—th green feed on wheat lan superior in appearance.

In general, from observa tions made up to the present it can be stated that flax has not an exhausting effect on soil fertility and I think the opinion of farmers would confirm this view.

Wide Survey

Mr. E. G. Smith, Rangiora:—

I have discussed this matter with the majority of the linen flax growers in Rangiora and Oxford districts, and I am thus in a position to quote opinions from all parts of the district and in regard to all the different types of soils. All the evidence to hand might be summarised by stating that there is no evidence to indicate that the linen flax crop has an exhausting effect on the soil fertility or that it prejudices success with the following crop. On the contrary numerous farmers have remarked on the success of

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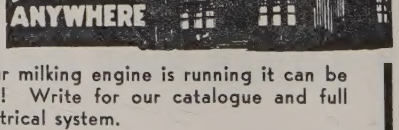

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wheat and other crops after flax, and there have been a number of instances of wheat crops proving more successful after flax than after rape or peas. Even where part of a paddock had been fallowed while the remainder had grown flax no difference was noted in the succeeding wheat crop.

The following details of crops sown following flax are only a few instances which serve to indicate that this crop does not have an exhaustive effect on the soil; the examples are typical of experiences of the linen flax growers in general throughout the district:—

1. Loburn: (a) 12 acres Solid Straw Tuscan wheat, 36 bushels; (b) 9 acres Solid Straw Tuscan wheat, 36 bushels; (c) 17 acres, 6 acres sown to wheat, 2½ acres to oats, and 8½ acres to rape. All good crops.

2. Springbank: (a) Algerian oats. Estimated yield of 100 bushels and 3½ tons chaff; (b) cross 7 wheat better after flax than after rape.

3. Warren: (a) 19 acres Solid Straw Tuscan wheat after flax, 26 bushels (est.); (b) 10 acres Solid Straw Tuscan wheat after rape, 22 bushels (est.); (c) 10 acres Solid Straw Tuscan wheat after Gartons, 20 bushels (est.).

4. Oxford: (a) 42 bushels Solid Straw Tuscan wheat, 2 tons flax per acre.

5. Cooper's Creek: (a) Hunters wheat on medium to light clay loam yielded 42 bushels; (b) oats and grass, estimated yield of 3 tons chaff on light clay loam.

6. Ashley Grange: (a) Oats, grass, and red clover. Sown March and cut for hay mid-December, second cut mid-February. Good crop and grass well established. Medium clay loam. (b) Solid Straw wheat crop on light to medium clay loam. Part of crop badly washed out by heavy rain and averaged 35 bushels. Estimated yield of 50 bushels where not washed out.

7. Ohoka: (a) 14 acres wheat (10 acres after flax, 4 acres after oats). Crop considerably better after the flax.

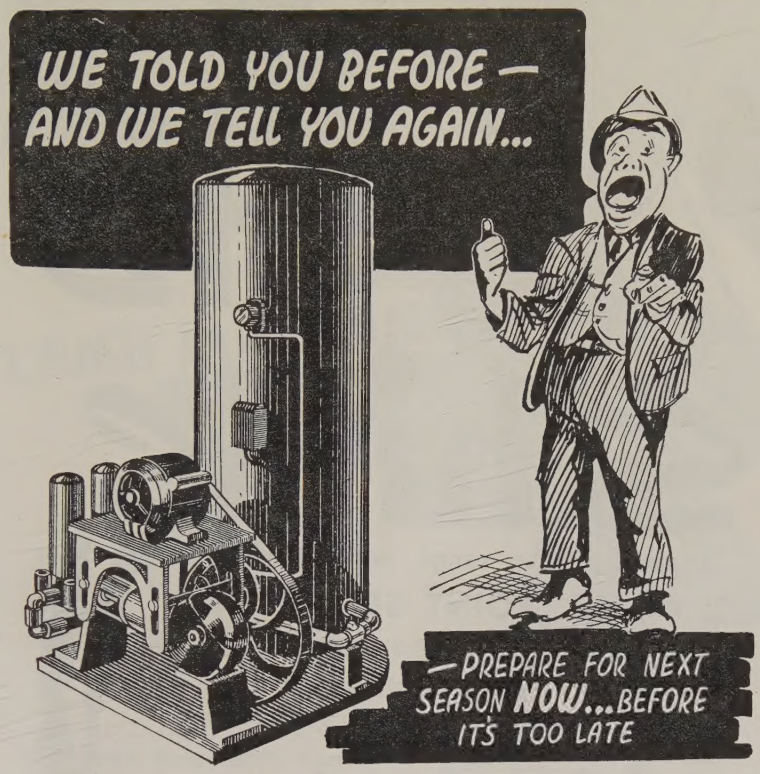
8. Fernside: (a) Area of wheat, part after flax crop and part following skim ploughing in December and fallowing. No differences noted in wheat crop.

Permanent pasture sown down with flax crops has been satisfactory, and the grasses and clovers have not been injured during pulling operations.

After Four Years

Mr. D. R. Wilkie, Blenheim:—

It can be stated definitely that following a comprehensive survey of Marlborough crops sown after linen



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flax, over a period of four years, no undue drop in fertility has been occasioned by the growing of this crop. In fact some of the experiences suggest that linen flax takes less out of the ground than barley, which is generally recognised as a light feeder.

The most popular crop sown in Marlborough after linen flax has been wheat, and in practically every case excellent following crops have been grown. A typical instance is the experience of a farmer in the Waihopai area —here a 3½ ton per acre crop of linen flax was harvested two years ago; the next crop of wheat yielded 63 bushels per acre, and this year wheat was again sown to give a return of 51 bushels per acre.

From another district a more direct comparison was possible. Here the farmer sowed a 20 acre paddock, half in linen flax and half in barley. Both crops were good and next year the whole paddock was sown in garden peas. Inspection of the peas at flowering time revealed a definite line of taller growth across the paddock. So marked was this line that it was clearly visible 200 yards away. Where the linen flax grew the year before, the peas were a better colour and were 8 to 10 inches higher than those after barley. Later it was noticed that the peas following linen flax matured better and finally yielded about 10 bushels more per acre than the other half of the paddock.

In the Seddon district a paddock was sown half in linen flax and half in barley and the following autumn the whole area was sown down to green feed. To use the words of the farmers in the district, the green feed following the linen flax was "half as good again" as that following barley. The difference lay in a much thicker strike, more robust plants, and a greater bulk of feed.

Red Clover Test

Another practice, the success of which points to the low fertility demand of linen flax, is that of sowing red clover with the crop. Should a large amount of plant food be extracted by the growing of linen flax one would not expect any other crop grown with the linen flax to have much of a chance. How successful these stands are can be judged from the accompanying photographs. The red clover was drilled in with the manure and linen flax seed, last year, and a good strike resulted—firstly, in the following year a crop of hay came from the clover (see stack shown in background of photograph), and now an excellent crop of clover seed is apparent.

Linen flax has been grown in the same paddock for two successive years with no appreciable decrease in yield. This practice is not recommended, as successive crops lay the way open to disease infestation, but in this experimental sowing the first crop yielded approximately 3 tons to the acre, and in the following year from the same area the crop was equally as good.

How the red clover looks immediately after pulling the linen flax.

Owing to the paper shortage, we have been compelled this month to print on a slightly smaller page. We regret this departure, but we are confident that our readers will accept this temporary change as a fortune of war and hope with us that circumstances will enable us to return to the old format in the near future.

You Can't Reasonably Continue Using the Knife to Your Disadvantage!

Striking results are quoted in the Scottish Journal of Agriculture of an experiment with the two methods of castrating lambs—the knife and the bloodless castrator.

Ten pairs of twin half-bred male lambs were taken from a flock of Cheviot ewes. One twin was castrated with the castrator, the other with the knife. The live weight gain between castration and weaning was recorded for each lamb, and the gain made by one lamb castrated with the castrator compared with that of its brother castrated with the knife.

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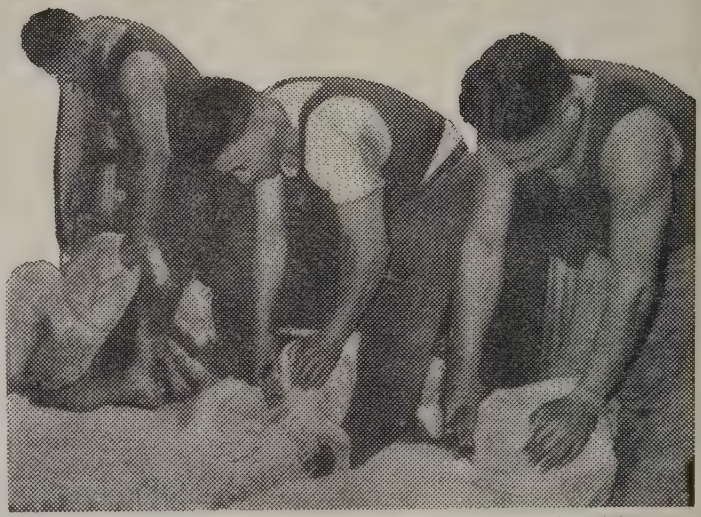

WOOL production is governed by FEEDING as much as by BREEDING.

The sheep's fleece consists of "wool fibre", "Suint" and "Fat". Wool fibre is pure protein. "Suint", the product of the sweat glands, is a complicated nitrogenous compound containing mineral matters. Wool "Fat", which is produced by the sebaceous glands, is somewhat of a misnomer, as this substance is in reality more in the nature of a wax. Its chief component is "cholesterol".

The "Suint" and the "Fat" together form the "Yolk", which lubricates the fleece and prevents wear of the serrations in addition to preserving it from weathering.

The two sets of glands which control the "Yolk" underlie the skin and are controlled directly by the digestive system. Hence a restriction of the functioning of these glands result in wool lacking condition and of inferior spinning quality (consequently bringing lower prices). Periods of malnutrition — as with low protein winter pastures or roots alone, may cause "tenderness" and "break".

Weight of fleece, condition of wool, length of staple and bloom can be considerably improved by proper feeding.

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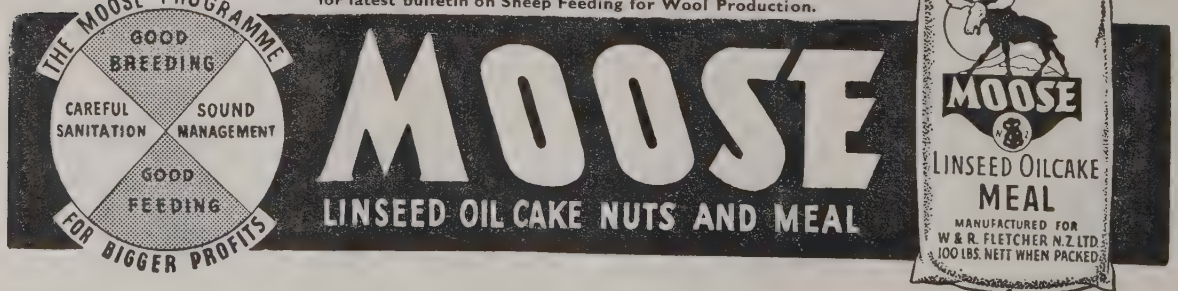

FORAGE CROPS FOR DAIRYING

The wise farmer provides against contingencies. He does not fear adverse climatic conditions which may deplete his feed supplies, as he has two or three strings to his bow. He has reserves of hay and (or) silage, and he can also count on supplementary forage crops. This article on forage crops deals generally with North Island conditions and more specifically with the Auckland Province. It points the way to a higher plane of stock nutrition, and shows that reliance on grass alone is a precarious practice.

By
C. WALKER,
Instructor in Agriculture,
Thames.

THERE is little doubt that the rapid expansion of the dairying industry has been due in a large measure, if not entirely, to the remarkable progress made in pasture research. In fact, pasture production has been raised to such a level of efficiency that many farmers in favoured localities have succeeded in carrying herds and maintaining production on grass alone.

Although many farmers have succeeded in dispensing with cropping either entirely or almost so, there are certain critical weaknesses in the system that depends on grass alone for dairy farm requirements.

In favoured localities, where pastures have reached a fairly high standard, grassland will practically meet all requirements in a favourable year. However, seasons are not always normal, and no farmer can justify an outlook that provides for nothing worse than normal conditions.

Actually, the higher the degree of efficiency gained in pastures the greater the disparity between yield during periods of high and low production. This is particularly noticeable in unfavourable seasons when pasture yields fall to zero irrespective of the quality of the sward.

Disorders in Stock

Furthermore, the improvement in growth that can be induced by modern pasture management appears to have created certain nutritional disorders in stock. Examples of these are the recent outbreaks of grass staggers and facial eczema. While no definite pronouncement can be made, it appears that these and similar disorders could be obviated by maintaining more uniformity in the type of fodder consumed by farm stock. This cannot be done on grass alone, nor does complete reliance on hay and ensilage suggest a safe remedy.

In addition the modern dairy farmer looks to pig farming to materially supplement the earnings from his herd. Apart from being of some value for the grazing of stores and sows, grass is not important as an ingredient of the fattening pig's diet. Therefore grains and easily digested crops are preferable and more payable than fibrous foodstuffs of the grass and green cereal type.

By the provision of farm grown crops, pig raising becomes most profitable. It enables autumn farrowed litters to be carried cheaply through the winter, so that by the spring they are sufficiently well grown to top off as baconers with the first flush of milk.

Thus, it is always advisable, in fact it is essential, to make some extra provision that will maintain production even in periods of adversity. Surplus crops are never a liability. They can always be used to good purpose in improving the condition of stock, or they may enable a farmer to buy in on a favourable market.

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Figs. 1 and 2.—Success in dairying depends on feeding to a large extent. The cow on the left has been well wintered, whereas the animal on the right is in poor condition.

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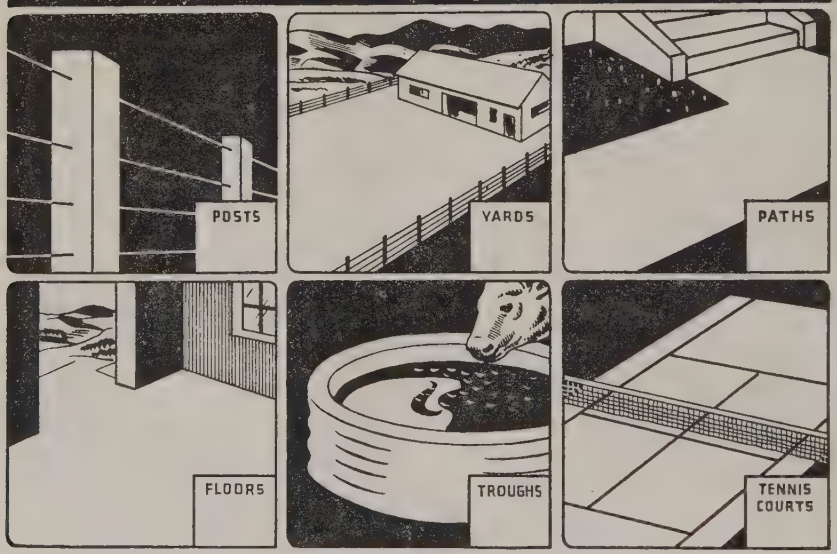

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milk production, growing grass is pre-eminent. Hay and ensilage cannot completely replace fresh grass, but they do materially assist in carrying stock through low production periods. In fact, when fed in adequate quantities in conjunction with a little fresh grass, the production level can be maintained fairly well.

Statistics show that the amount of hay saved per dairy cow is about 5 cwt. per annum. This quantity is totally inadequate and leaves no safety margin whatever. Until the figure is raised to 15 cwt. or higher per cow the position will not be sound.

Quality Hay

To get good quality, the haying material must be cut when it is at a nutritious stage, i.e., just prior to flowering. Any delay beyond this point results in a reduction in the nutritive value with a corresponding increase in the indigestible fibre content. Material should not remain in the swathe to be bleached by the sun, but should be turned to hasten drying, retain colour, and minimise leaf and clover losses. With modern swathe turners the amount of hand work involved can be greatly reduced. As soon as possible the material should be put up into windrows and finally into cocks to further conserve quality and permit of final drying.

The stacking of hay requires great care. The most experienced workers should be in charge of this work. Care should be taken to keep the centre well hearted so as to provide good watershed. At the same time the sides should be built up carefully and should be kept well raked to ensure that they are soundly constructed.

A well-built haystack, suitably topped off, should be capable of withstanding rains quite well. It is always advisable, however, to cover stacks, and for this purpose corrugated iron roofs are most satisfactory. Where this is not available weighted net or sack covers will be found fairly efficient. In order to

prolong the life of sack covers they should be soaked in a 2 per cent. bluestone solution.

Lucerne

In addition to surplus pasture, such crops as oats and lucerne can be usefully converted into hay reserves. Lucerne requires special attention and may be cured a little greener than ordinary meadow hay. Cutting should occur before the leaves begin to fall. Before the material has dried out, it should be put in windrows and finally into cocks to mature before stacking. The aim should be to expose as little as possible to direct sun drying. If lucerne is cured as one would treat meadow hay all the nutritious leafage would fall away, leaving only the fibrous stalks for stock food. For information on lucerne growing see bulletin No. 155, free on request.

With regard to ensilage there is certainly a diversity of opinion as to its value as compared with hay. Ensilage, however, has proved to be an excellent supplement to pastures and during dry periods has been superior to hay in maintaining milk yields. There is certainly a place for both on the average farm, and the fact that ensilage making can be proceeded with in showery weather suggests that early crops should be converted into this product while later fields should be reserved for haymaking. Such a practice would certainly lead to the making of better hay.

Selection of Area

In any system of cropping to supplement pasture production on dairy farms, the main aim should be to get high yields on small areas, as the average dairy farmer has very limited time to devote to cropping. Any suggestion of extensive cropping, therefore, will be unpopular and probably would result in failure if attempted.

Generally speaking, the chief causes of failure in cropping are:—

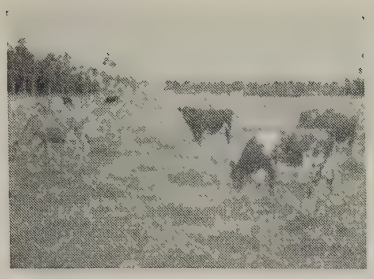

Fig. 3.—A well-conditioned herd.

(1) Unsuitability of the selected area.

(2) Poor initial preparation for crops.

Frequently the area chosen for cropping is one which fails to carry a satisfactory sward of grass, because of low soil fertility. Such areas are unsuitable for annual crops, as high fertility is essential to their success. It would be far sounder to break up such grassland and return it to pasture which can be materially improved by annual topdressing. With annual crops their periods of growth are so short that only the most fertile fields should be used for their cultivation.

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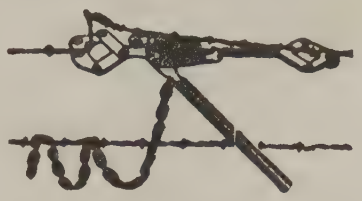

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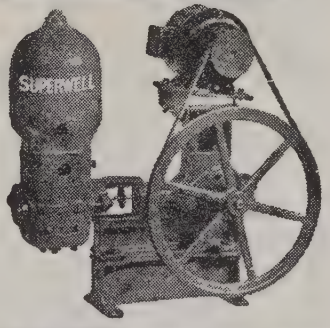

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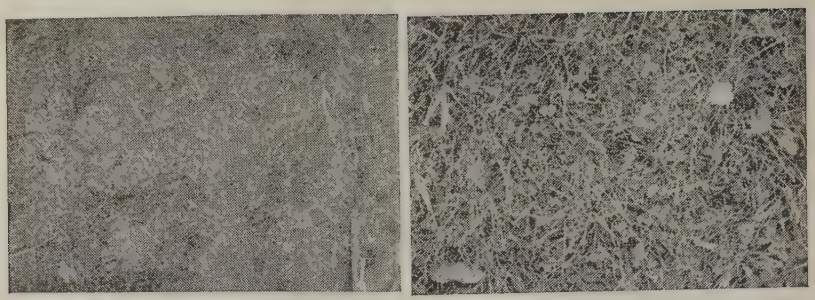

Figs. 4 and 5.—**Under normal climatic conditions there is a vast difference between the production from these swards. Droughts, however, are great levellers. Consequently the low-carrying sward shown on the left will be little inferior at such times to the superior type shown on the right.**

The selected area should possess a high degree of fertility. This condition will be present in such areas as old pig runs, night paddocks, and old pasture generally. Where fertility is not at a high level it may be increased by carting out and spreading farmyard manure, by the feeding out of hay and ensilage on the area for some time before ploughing, and by the use of increased quantities of artificial fertiliser with the crops.

Supplementary cropping on dairy farms is carried out primarily to bridge periods of low grass production that occur in all normal years. By raising soil fertility, high yields are possible, even to the extent of practically doubling the average farm yields. Under intensive crop production yields of 70 tons carrots, 80 tons mangolds, 60 tons swedes, and 90-100 bushels of maize are by no means uncommon. Such figures are attainable by the average farmer if the initial fertility and good preparation are provided.

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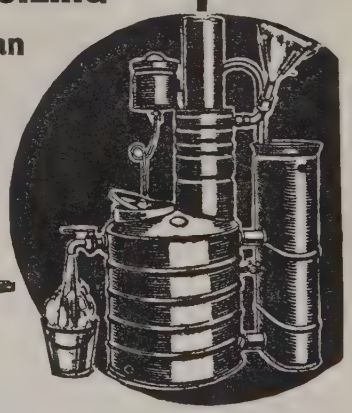

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Cultivation

In preparing an area for cropping the first operations should be commenced sufficiently early to allow the land to be brought to an ideal condition in time for sowing. For spring sown crops the initial ploughing should take place in the winter.

Where an old grass paddock is to be used it may be skim-ploughed at first and subsequently ploughed to normal depth during September. Thorough cultivation with the discs should follow. This implement tends to work the finer soil to the bottom and the coarser pieces to the surface, where they can be pulverised with harrows and roller. A fine seed bed from the bottom of the farrow to the surface will thus be obtained. If discing is inefficiently performed a very uneven seed bed containing numerous air pockets will be provided. Such conditions lead to heavy crop mortality, especially in dry or otherwise unfavourable seasons.

The numbers of harrowings, discings, etc., will depend on the nature of the soil. Free working soils obviously would require less attention than heavier soils.

As the areas involved will be small, a further deep ploughing should be given a week or two before sowing. This should be followed by harrowing to level and thorough rolling to provide a firm seed bed. Consolidation of the seed bed is very important for getting good strikes of crops.

With autumn sown crops the first ploughing should be given in early summer to be followed by thorough and regular cultivation to check weed growth. Where twitchy grasses have to be contended with the area should be skim ploughed and thoroughly worked with discs and harrows to eradicate as much as possible. Carting off or burning where feasible should be done. A deep ploughing just before sowing should be given, after which the area could be worked down and consolidated.

Thorough cultivation will well repay one for the work performed. The effects of unfavourable seasonable conditions can be materially countered by such preparation. On the other hand, hasty and otherwise poor cultivation will usually result in a large measure of crop failure. Moreover, no amount of subsequent cultural treatment will compensate for lack of initial preparation.

Manuring of Crops

In general the fertility of the cropping area should be raised to the highest level by applying artificial fertilisers to the limit permitted by the rationing schedule. Phosphates for the basis of all crop mixtures and superphosphate which is the usual form of phosphate applied can be safely used with all except such thin-skinned seeds as those of the brassica family. This group contains such seeds as turnips, swedes, rape, chou moellier, and kale, and the use of superphosphate, particularly when drilled with the seed, may cause germination injury.

Serpentine superphosphate, reverted phosphate, or lime-superphosphate mixtures should be sown with brassica crops. The addition of nitrogen when procurable is recommended with all leafy crops when a high yield is required, and of these maize, millet, mangolds, carrots, pumpkins, and marrows are the most commonly grown.

Suitable Crops

The following notes on the various crops should be accepted as a general guide for a wide range of climatic and soil conditions rather than as exact procedure for any locality. Where a farmer is in doubt as to which crops to grow or how to grow them he should communicate with the local Instructor in Agriculture.

Mangolds

Mangolds require a good, rich, deeply worked soil. Taken after grass they give good crops, as there is no

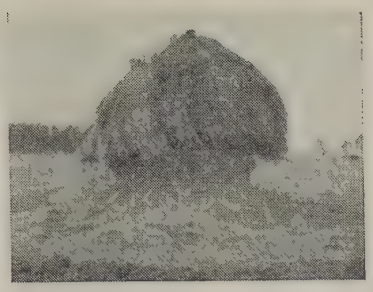

Fig. 6.—Adequate reserves are important and they should be protected from weather and stock.

serious weed competition, while the soil fertility is still high.

Varieties.—Common and popular varieties are Long Red, Yellow Intermediate, Red Intermediate, and Yellow Globe. Globe varieties should be preferred for transplanting.

Seed should be sown during October in rows 20 inches to 28 inches apart, at the rate of 4 to 6lb per acre.

Fig. 7.—A mangold clamp on a Waikato farm. Mangolds are heavy yielders, almost disease-free, and provide an excellent supplement to hay.

The plants should be thinned later to 10 inch intervals.

Where annual weed competition is likely to be serious, plants should be raised in a seed bed, the seed being sown in September. The area upon which the crop is to be grown may then be kept well cultivated into the hot weather when weeds will be almost completely destroyed.

Transplanting may take place from mid-December onward, when the mangold plants have tap-roots at least as thick as one's thumb. Larger plants will transplant quite well, but weaker plants frequently fail to strike. As far as possible transplanting should take place when the land is moist from recent rains or during showery weather.

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A good practice is to set the plough to turn a 10 inch furrow. After ploughing a headland, set plants against the turned furrow at nine to 10-inch intervals. Run the manure along the furrow below the plants, and then turn two more furrows before planting another row. As the plants are covered by a following furrow they should be firmed in position at the same level as they were growing in the seed bed. Under this system of planting further cultivation is unnecessary, unless the season is highly favourable to weeds.

Mangolds should be lifted and stored to mature for some weeks before being fed to stock. It is claimed that they should not be fed to dairy cattle for at least a month after lifting. If to be used for pig feeding, they should be held for at least six weeks.

Carrots

As with mangolds, carrots do best on highly fertile soils that have been deeply worked.

Varieties—Popular varieties are Matchless White, Holmes Improved, White Belgian, Sinclair's Champion, and Guerande. Guerande does quite well on somewhat lighter soils provided that manuring is adequate.

Seed may be sown in October and early November in 14 to 24 inch drills at the rate of 2 to 4 lb. per acre.

Owing to the amount of handwork that has to be performed in thinning and weeding, carrots should be taken after grass to avoid considerable weed competition. Success with carrots is directly dependent upon the amount of care given the crop. Undoubtedly it well repays close attention, but the fact that excessive handwork is involved has tended to reduce the popularity of this crop on the average dairy farm.

Carrots will remain in good condition in the ground and may be dug as required. No period of storage is necessary before using the crop.

Swedes

Swedes will grow well on a wide range of soils. Best results, however are obtained on good, well-worked loams. While good crops may result from broadcasting on bush burns or on cultivated land, the best results are obtained by drilling on cultivated land.

Varieties—Popular varieties are New Zealand Superlative, New Zealand Grandmaster, New Zealand Crimson King. New Zealand Resistant have also gained support on account of their disease resistant qualities.

Seed should be sown in October and November in 7 inch to 14 inch drills at 12 to 16 ounces per acre. Some intercultivation in the early stages to check weeds will well repay the attention.

Swedes will not keep well and should be used as they mature. Owing to the fact that they cause feed taints in milk, they should be used principally for dry stock. If fed to milking cows they should be given at least three hours before milking.

Fig. 8.—Swedes are a valuable crop for winter feeding.

Soft Turnips

Seeding, cultivation, and utilisation of the crop closely follow the practices suggested for swedes.

Varieties—Soft turnips fall into two groups, viz., the very early white fleshed types and the somewhat later yellow fleshed varieties. Popular white varieties are New Zealand Purple Globe, New Zealand Red Globe, and New Zealand Green Globe. Yellow varieties worth attention are New Zealand Purple Top Yellow and New Zealand Green Top Yellow.

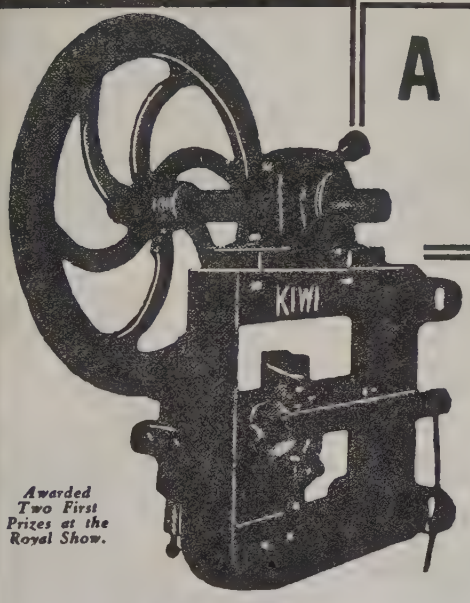
Soft turnips may be sown from November onwards for succession. Where a single sowing is preferred a succession may be obtained by sowing varieties of both white and yellow fleshed types.

Rape

Rape is most suited for pigs and dry cattle. Cows in milk will be inclined to produce feed tainted milk, especially if fed on rape within three hours of milking.

Varieties — Broad-leaved Essex, Dwarf Essex, and Giant are the main varieties. Giant is becoming more popular in view of its heavier yields.

Seed should be sown in 7 inch or 14 inch drills at the rate of 2 to 3



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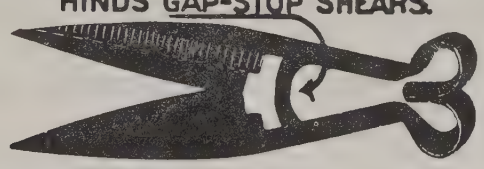

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lb. per acre. The crop will mature in about ten weeks to three months, so that sowings should be made about this period before the time when feed supplies will be required. Mustard seed at the rate of 4 to 8 ounces per acre should always be sown with rape, its function being to aid digestion.

Rape is most economically utilised when fed off in breaks. Sufficient material for a few days should be made available at a time, and if wastage is apparent the areas should be reduced. The crop should be used before the flowering stage, as it is likely to cause bloat at any later stage.

Chou Mollier

This crop will grow well on a good deep loam. Seed is sown in October and November in 14 inch and 28 inch drills at the rate of 1 to 2 lb. of seed per acre. In some parts sowing in 7 inch drills has been practised with good results, the crops being finer in the stem and more leafy.

When sown in the wider drills intercultivation should be practised, especially in the early stages of growth. In the wider drills plants should be thinned to 12-inch intervals where necessary to allow of greater plant development.

Cereals

Green cereals are often often grown to provide an extra "bite" during late winter and early spring. For this purpose Algerian Oats and Skinless Barley have been employed successfully on dairy farms. On occasions a legume such as tares or peas has been associated with the cereal, but the sowing of the latter alone is a much commoner practice.

Algerian oats sown at 2 to 2½ bushels per acre in 7-inch drills in April will give good winter and early spring feed for dairy cows. If judiciously grazed the crop may be allowed to continue after grazing for hay. Barley sown at 1½ to 2 bushels per acre will perform a similar function, although oats would usually be preferred.

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Already it has been thoroughly tested and proved on hundreds of New Zealand farms, and it is acclaimed as the greatest advancement in the milking shed since mechanical milking was introduced.

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Maize, Millet, Sorghum

These crops require hot, frost-free conditions for best growth.

Maize will give exceptionally high yields of green material. For this purpose it should be sown in October-November in 2½ to 3 feet drills at 1½ to 2 bushels per acre. Some intercultivation in the early stages will be beneficial.

Varieties recommended are Hickory King, Horsetooth, and Excelsior. Maize should always be cut and carted out to stock.

Millet requires similar conditions to maize. Seed should be sown in 7 inch drills at 15 lb. per acre during November. This crop may be cut and carted out, or it may be fed in breaks.

The most popular variety is Japanese millet, while some White French millet is also grown.

Sorghum, like maize and millet should not be sown until all danger of frost has passed. The seed should then be sown in 14 to 28 inch drills at the rate of 25 lb. per acre. Some intercultivation, as recommended for maize, is desirable.

Sorghum should always be allowed to wilt before being fed to stock, as it may possess toxic properties. This is frequently so at flowering or after being frosted.

Fig. 9.—A mature crop of maize and kumikumis. The grain has been harvested and the marrows will be fed in the field to pigs or dry stock.

Pumpkins and Cattle Marrows

Quite useful cattle and pig food is supplied by pumpkin and marrow crops.

The usual practice is to sow seed in late October to early December in hills or rows at from six to twelve feet intervals. For this purpose from 2 to 4lb. seed will be required.

Cattle marrows or kumikumis are also frequently associated with maize crops grown for grain. The maize stalks are eaten off by cattle and the marrows fed to pigs.

Maize for Grain

For wintering pigs maize has considerable value in parts of Auckland Province. As a farm crop it can be easily and cheaply grown.

Seed should be sown in three feet drills in late October, 14lb being required per acre. Intercultivation should be thorough in the early stages.

Varieties that do well are Early Butler, Excelsior, Horsetooth, Marigold, and Silver Queen.

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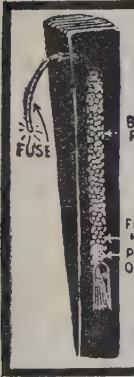

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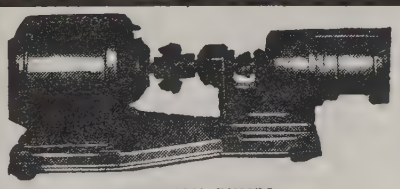

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Have YOU thought of it this way?

SCENE: A New Zealand home on a recent paynight

Wife: How much this week, Jim?

Husband: Not bad. You can get yourself a real good winter rig-out.

Wife: Not this year, Jim. Last year's things will do all right.

Husband: What about something for the house, then?

Wife: I feel we ought to put the money into National Savings.

Husband: But I am putting ten bob a week into the Savings Group at the Works. Isn't that enough?

Wife: It would be enough if we couldn't afford more, Jim.

Husband: What's the point of making it more?

Wife: Two points, Jim! First, we've got to do our bit to win the war. The only way is by lending every penny we can to the Country. The second point is—the more we save now, the better off we'll be when the war is over.

Husband: But is there any need to stint ourselves in the meantime?

Wife: What's the sense of putting more clothes on our backs or more things into the home just now? The money will do more good if it's lent to the Country.

Husband: You've won! From now on *all* our extra money goes into National Savings!

CHANGE "WEAKLY" TO WEEKLY Resolve now that you will save regularly WEEK BY WEEK, and deposit your savings in your NATIONAL SAVINGS ACCOUNT (Deposits repayable 30 June, 1945).

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N.S.13.27

Profitable Potatoes on Gumland

P. S. SYME, Instructor in Agriculture, Warkworth.

At least one farmer is finding that the growing of potatoes is a profitable venture on gumland. The selection of the land to be cropped must be carefully made, but there are many acres in North Auckland which would handsomely repay any farmer who sets out to assist in overcoming the present shortage.

Fig. 1.—A vigorous crop of potatoes growing on old gumland pasture which had been broken up for the planting of fruit trees.

WITH potatoes bringing profitable prices, many farmers have thought regretfully of the nice tidy sum which they might have obtained from an acre or two grown on the farm. The farmer's wife, too, has had something to say on the subject when checking over her grocery account.

If only words are translated into deeds, the area planted during the coming season should surely prove a record.

That productive and profitable crops can be grown even on the so-called gumland without materially increasing the labour problem and without interfering with the work of the farm, is the experience of Mr. H. A. S. Lloyd on his farm at Kaukapakapa.

To be successful, however, Mr. Lloyd points out, the land must be carefully selected, cultivation must be thorough, and planting must be done at the right time. In practice this means that the area grown must not be too large, and probably should not exceed from 2 to 3 acres at the very most.

Mr. Lloyd's farm comprises about 300 acres, mostly undulating to hilly, and is fairly representative of the average type of gumland found over wide areas of North Auckland. Part of the farm was ploughed over for gum about twenty years ago, and eventually reverted to fern and scrub. It is on this class of land that Mr. Lloyd has for some years been growing profitable potato crops.

Mr. Lloyd believes in planning well ahead. Whether the land has been ploughed out of scrub, or an old run-out pasture is being broken up, the work is usually begun about a year ahead of planting. The ground may be cropped in turnips or merely fallowed, but whichever course is adopted plenty of time is allowed for the soil to mellow with exposure, and for the turf to rot down and become incorporated with the soil.

As previously mentioned, the farm is on typical gumland. However, not all gumland soil is considered good enough for potatoes, and great care is taken to select a piece of good puriri or light, chocolate-coloured soil having good natural drainage. Attempts have been made to grow potatoes on the heavy pipe-clay type of gumland, but these have not proved altogether successful. Special care is taken to see that the site chosen is above the normal frost level, has a warm aspect and is exposed to a free draught of air. Frost hollows or any basin-like depressions are avoided at all costs.

Fig. 2.—Lifting the crop shown in Fig. 1. The crop was a good one and proved highly profitable.

Time of Planting

The seed, about 15 cwt. per acre, is obtained well in advance of planting, and is spread thinly over the woolshed floor where it is exposed to air and light to induce sprouting.

Mr. Lloyd is not greatly concerned with the variety, though he has a slight preference for Arran Chief. Planting is usually performed towards the end of July or early in August, according to weather conditions, the seed being carted out in trays or boxes to prevent damage to the sprouts.

Mr. Lloyd has tried June planting, but found that nothing is gained by this and there is in fact a greater danger from frost. Too late planting, on the other hand, is apt to result in a reduced yield and a greater risk from disease.

Planting the Crop

Planting is quite simply and expeditiously performed by ploughing over the ground—which has been worked up in advance—and placing a row of seed alongside each third furrow. The seed is placed either in the face of the landside or on the top edge to be clear of the horses' feet, so that it falls over and is buried as the furrow slice lifts on the mouldboard. About 12 to 14 inches is allowed between the sets.

The fertiliser is simply spread along the open furrow before the row of seed is ploughed under. Normally, Mr. Lloyd uses as much as 15 cwt. super and 5 cwt. sulphate of ammonia per acre, but this year he proposes to use either super alone or a super-blood and bone mixture in whatever quantities may be available.

Inter-cultivation Important

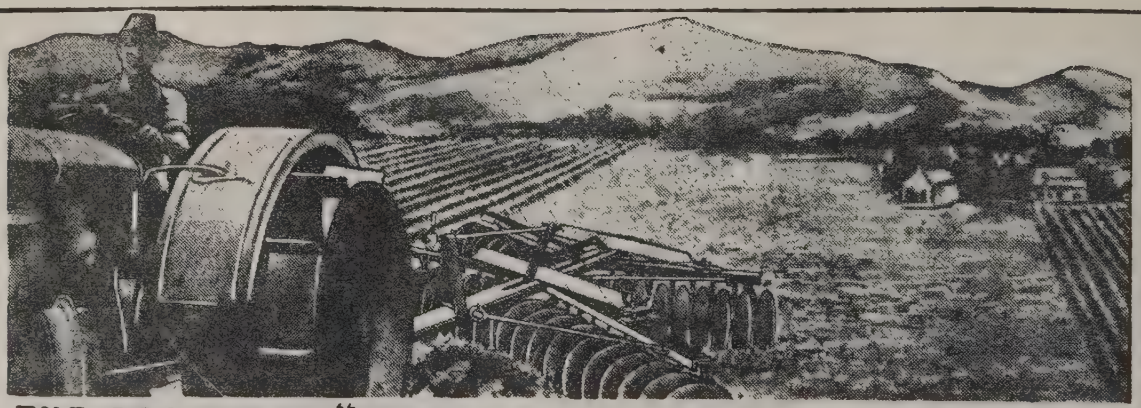
When the crop is through, the soil between the rows is kept worked by a scarifier to improve the tilth and destroy the weeds. Any weeds in the rows are dealt with by hand hoeing. When the scarifier can no longer be safely operated without damage to the growing crop, the rows are finely earthed up.

This operation is important and must be carefully performed to prevent greening or sunscorching of the tubers. Mr. Lloyd has had very little trouble with blight, and considers that the risk does not justify spraying.

Lifting the Crop

The crop is usually ready about 15 weeks after planting and is lifted and sold as orders are received. The land is generally cleared before the middle of January. It may be cropped a second time, but more usually the ground is disced down to a seed bed and sown down in permanent pasture some time in March.

The yields obtained have varied from about 6 tons up



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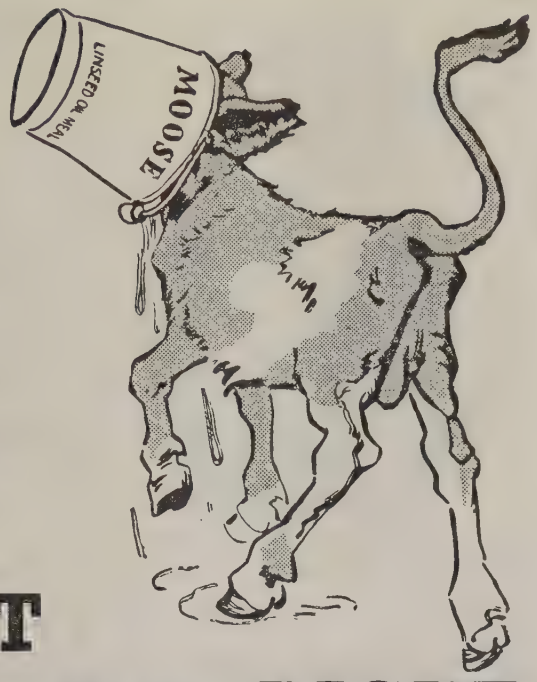
to 15 tons per acre, according to soil and season. Prices too have varied considerably, but on the average the crop has proved highly profitable. While potato prices boom and slump, Mr. Lloyd considers that so long as he regularly grows a small acreage he will get the average price over a period, and experience has shown him that average prices leave him a reasonable margin of profit.

Apart from regularly bringing in a useful cheque — and in some years a very handsome one—potato growing as a sideline appeals to Mr. Lloyd, who likes to have his eggs in more than one basket. The crop fits in well with the work involved in his programme of land reclamation and pasture improvement as well as finding some of the necessary money; while the work entailed provides a welcome and remunerative change from the prosaic routine of the dairy farm.

Seed Potato Certification

IT has been the practice in the past not to accept seed potatoes from provisionally certified potato crops for tagging as finally certified seed if the smallest tubers in any hundred selected at random weighed less than 2 lb. While the principle behind this regulation still holds, it has been considered expedient, in view of the extreme shortage of seed potatoes, to waive this regulation in order that the small tubers from a provisionally certified crop may be identified from similar tubers from an uncertified crop.

It has been decided to accept for tagging as certified seed the produce of provisionally certified potato crops provided the 16 smallest tubers in any hundred weigh not less than 1 lb., and the tubers otherwise come up to the standard of grading required for certified seed potatoes. The words "under grade" will be stamped on the certification tags issued in respect of seed potatoes coming within the scope of the relaxed regulations, but not reaching the standard of size required by the original regulations.



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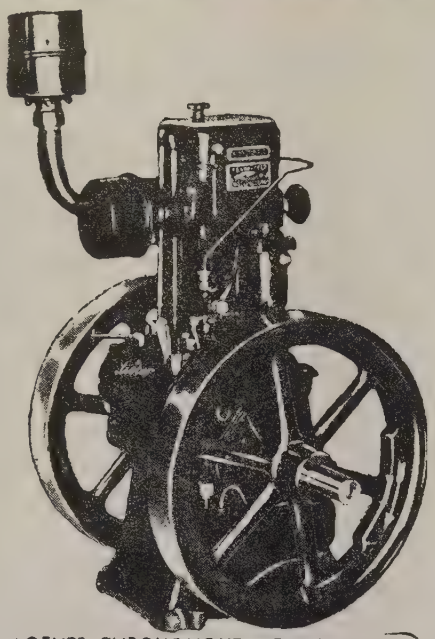

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RESULTS OF STRATFORD EXPERIMENTS

—By—

G. A. BLAKE, Instructor in Agriculture and Chairman of the Stratford Demonstration Farm Committee.

DURING the past several years the Stratford Demonstration Farm has been the venue of many experiments, and the object of this article is to give, in a concise form, the results and recommendations gained from these experiments.

These trials are of several years duration in order to ascertain the types of grasses and clovers most suited to the district, and after seven years' experience with these plots, there is no hesitation in recommending only certified seeds of ryegrass, cocksfoot, red and white clover—our main sward constituents. The use of this certified seed has resulted in a dense, vigorous sward, almost free from weeds, while alongside, under identical treatment and management, the use of inferior or uncertified types has resulted in an open sward, throwing little feed and with weeds and inferior grasses becoming dominant.

In conjunction with the strain trials, plots were sown at both double and half the normal rate of 40 lb. of seed mixture per acre. Results show that nothing is to be gained by sowing too much seed, except to increase greatly the cost of establishment, while to sow too little results in an open, weedy, clumpy sward. Taranaki farmers should therefore use only certified seed and sow about 40 lb. per acre.

Although the experiments carried out at the Stratford Demonstration Farm are primarily for the guidance of Taranaki farmers, many of them are applicable to the other dairying districts of the Dominion as well. The manurial trials are perhaps the most localised in their application, but investigations into grass and clover strains, control of Californian Thistle, ensilage making, and the control of mastitis are relevant to a much wider range of dairy territory.

Manurial Experiments

These may be summarised as follows:—

Lime at 1 ton per acre followed by 5 cwt. annually, plus super or basic slag at 3 cwt. per acre, plus 30 per cent. potash at 2 cwt. per acre—Excellent.

Super or basic slag plus 30 per cent. potash—Very good.

Basic slag at 3 cwt.—Good.

Lime 5 cwt., super 3 cwt.—Good.

Serpentine super, at 3 cwt.—Very fair.

Super at 3 cwt.—Fair.

Heskett slag at 3 cwt.—Poor.

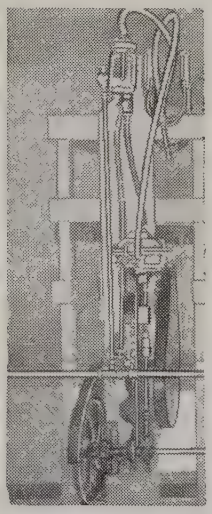
Potash Trials

Thirty per cent. potash salts give a quicker and better response than either the sulphate or muriate forms, but the use of sulphate of potash can be recommended in the absence of the potash salts.

This experiment entailed the top-dressing of separate plots each month from March to October inclusive with 30 per cent. potash at 2 cwt. per acre. After three years' investigation March and April are found to be the best months for applying potash, but these months are closely followed by August and September.

Plots were treated with 1 cwt., 2 cwt., and 3 cwt. of 30 per cent. potash respectively for three years, and after this period it was found that 2 cwt. and 3 cwt. per acre gave identical results, while the use of 1 cwt. per acre, although it greatly improved the sward, was not comparable with the greater quantity. On costs, as well as result, 2 cwt. per acre is therefore recommended.

"New Departure"



For illustration 2-cow plant, see June issue.

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Control of California Thistle

(1) **By Salt.**—For three years portion of a field badly infested with Californian thistle has been treated with 4 cwt. of common salt per acre per year. Because of the increased palatability of the grass, this area was better grazed than the balance of the field, and probably because of the subsequent tramping and better consolidation, the thistle was reduced in vigour and denseness, but as a complete control for this thistle cannot be recommended.

(2) **By Cultural Methods.**—Another field badly infested with the thistle was subdivided into four areas, the individual treatments being as follows:—

(a) Thistle mown and removed, area ploughed deeply, rolled on the furrow, summer fallowed, and sown to permanent pasture in the autumn.

(b) Thistle mown and removed, area drastically harrowed and surface sown in the autumn.

(c) Thistle mown and removed. Subsequent growths were also mown but not removed.

(d) Thistle mown and removed. Subsequent growths were badly bruised by several strokes of the chain-harrows.

At the present time, 2½ years after the trial commenced, the areas under treatment (a) and (b) are practically free from thistle, but on the balance of the field no diminution in the vigour or denseness of the thistle is evident. Continual cutting cannot therefore be recommended as a control, but the removing of the first growth allows the grass to recover and prevents further spread of the pest through the agency of its seed.

As a war measure the breaking up of a permanent sward is not advisable, but some control can apparently be obtained by surface sowing, besides which better species are introduced into the sward, and a greater return obtained from the limited amount of fertiliser available.

(3) **By Chemical Means.**—In this trial the freshly cut ends of Californian thistle were treated with sodium chlorate in solution. This resulted in a much sparser growth, but until such time as a suitable machine for this work is designed, this type of treatment must be postponed, but on small areas, spraying, after cutting, with

Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the month of May, 1942, have been compiled by the Livestock Division:—

District	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Swine
North Island.						
Meat-export Slaughterhouses—						
Auckland	44,959	4,657	13,054	8,821	55,100	38,422
Poverty Bay-Hawkes Bay	13,296	601	34,608	20,243	78,007	3,655
Taranaki-Manawatu	20,989	546	7,283	5,147	71,964	24,155
Wairarapa-Wellington	9,120	274	10,563	6,360	75,130	3,596
Totals	88,364	6,078	65,508	40,571	280,201	69,828
Abattoirs	10,576	2,775	47,690	22,551	6,665	13,722
North Island Totals	98,940	8,853	113,198	63,122	286,866	83,550
South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough	395	2	5,972	4,404	24,572	1,311
Canterbury	1,723	1,240	58,233	43,596	213,757	3,954
Otago-Southland	2,150	2	42,445	34,016	321,132	943
Totals	4,268	1,244	106,650	82,016	559,461	6,028
Abattoirs	5,274	1,086	24,522	13,419	3,654	4,283
South Island Totals	9,542	2,330	131,172	95,435	563,115	10,491
Dominion.						
Meat-expt. Slaughterhouses	92,632	7,322	172,158	122,587	839,662	76,036
Abattoirs	15,850	3,861	72,212	35,970	10,319	18,005
Grand Totals	108,482	11,183	244,370	158,557	849,981	94,041
Same Period, 1941—Meat Export Slaughterhouses and Abattoirs	101,049	11,534	344,072	225,176	979,679	108,666
Same Period, 1940—Meat Export Slaughterhouses and Abattoirs	124,974	18,719	577,333	384,870	1,011,041	120,864

Slaughterings of Pigs

The 94,041 pigs slaughtered at meat-export slaughterhouses and abattoirs during the month of May, 1942, were distributed in weight ranges approximately as follows:—

Up to 60 lb.	5,277
61-110 lb.	54,237
111-120 lb.	8,701
121-160 lb.	17,958
161-180 lb.	2,494
Over 180 lb.	1,805
Sundries	3,569

The grading of porkers is 85 per cent. of 1st quality and 15 per cent. of second quality, and that of baconers is 83 per cent. of Prime 1's, 12 per cent. of Prime 2's and 5 per cent. of second quality.

In the different weight ranges of baconers the grading is as follows:—

111-120 lbs.	90%, 7%, 3% of P1's, P2's and 2nds.
121-160 lbs.	83%, 11%, 6% of P1's, P2's and 2nds.
161-180 lbs.	66%, 23%, 11% of P1's, P2's and 2nds.

1 lb. of sodium chlorate in 7 lb. of water should help to control it.

Rate of Growth Trial

This has already been dealt with in recent issues of the Journal, the main facts being that Central Taranaki produces enough grass to carry one cow, producing 300 lb. of butterfat, on 1½ acres, and that ½ acre of hay or ensilage should be saved per cow per year to provide adequately for periods of short supply.

Sheep on the Dairy Farm

This also has been fully written up in the Journal, the main conclusions being that sheep return just half the revenue received from dairy cows, and that every ten ewes replaces one cow.

Trials with Ensilage

1. Molasses on Silage.—It often happens, in this district, that a field intended for hay has to be converted to silage on account of the wet weather. The herbage is therefore rather dry and stalky and sometimes needs the addition of water to the stack to prevent overheating. The practicability of using molasses thinned with water was investigated. It was found that one gallon of molasses will readily liquefy in two gallons of cold water and can then be applied with a watering can. Only a few minutes was necessary to both dissolve and apply the molasses and no loss of building time resulted. It was also noted that the mixture should not be applied nearer than two feet to the edge of the stack or excessive waste of molasses occurred. By the use of this material overheating is stopped, while the food value of the manufactured article is increased.

2. Silage Stacks Without Weights.—Four stacks of ensilage have been made without any earth cover or weight of any description, but the centres were built high to turn rain water. In every case excessive waste occurred on the sides and top edges of the stacks, but it was also noted that with the greener and leafier material less waste occurred than where the grass was in seed head. Because of the waste, the making of ensilage without weighting cannot be recommended.

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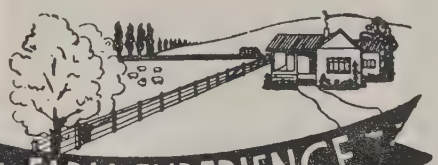

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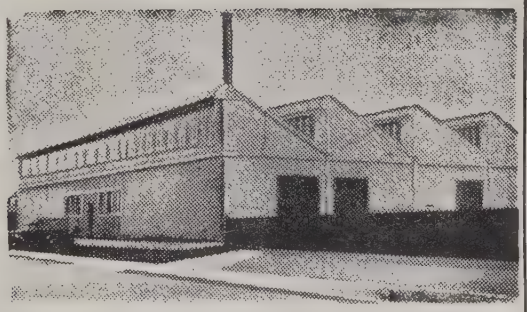

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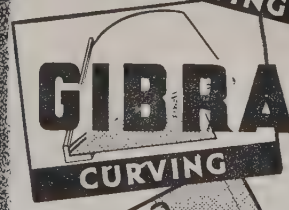

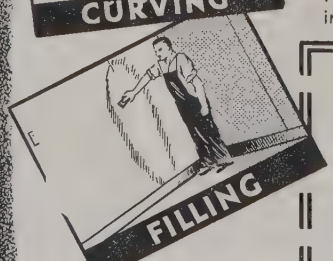

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3. Feeding Silage to Sheep—It is generally recognised that sheep do not readily take to silage, but on the demonstration farm it was found that after three days all the ewes were eating it. The silage fed to the sheep was made from short leafy material, and there was a definite preference for this type. Later made silage was not relished, so that where this fodder is intended for sheep it should be harvested before the seed heads appear.

Control of Mastitis

This disease was taking a high annual toll of the herd, and no treatment, except culling, was giving results. As a last resort the whole herd was tested for mastitis, when 18 reactors were found. These cows were branded, drafted into a separate yard at each milking, and milked last. This system of management immediately stopped the spread of the disease and by the end of the season only 3 cows were badly affected, and these were culled. For the two seasons since this was done no excessive trouble with mastitis has been experienced.

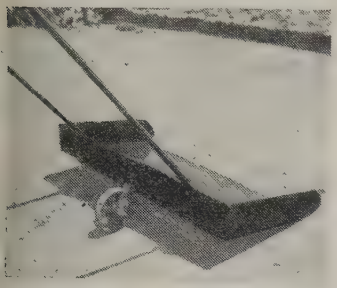
As a means of preventing the spread and ultimate control of mastitis, the milking of affected cows last, appears to be well worth while.

SUBSCRIPTION RATES.

The *Journal* is issued monthly. The subscription within New Zealand, which is payable in advance and includes postage, is 2s. 6d. a year. The overseas subscription is 5s. Subscriptions should be forwarded or paid direct to any office of the Department of Agriculture in the Dominion. Single copies, price 6d., are available from the Department of Agriculture, Box 3004, Wellington.

A Handy Cowshed Scraper

SHED scrapers have been improvised from such articles as old crosscut saws, discarded motor tyres, and timber, but all share the undesirable feature of allowing some of the material to escape past the end of the blade, especially when a fair quantity has been collected.



A scraper which overcomes this feature and is illustrated here was recently seen on the farm of Mr. F. X. Nolly, Stratford. It can be manufactured on the farm from an old 200 or 400-gallon square iron tank. The blade is 24 inches wide by 16 inches deep, while the sides are 4 inches high.

Although the illustration depicts the scraper with one wheel, the owner considers that two wheels, one at each back corner, would improve the machine. These wheels are so arranged that the back of the scraper is raised 4 inches from the floor. A suitable handle bolted to the back of the scraper completes its manufacture.

For collecting isolated droppings this scraper is ideal, and when full, the front edge can be raised by pressing on the handles and the whole wheeled to the desired point without smearing the clean portion of the yard.

—G. A. BLAKE, Instructor in Agriculture, Stratford.

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Veterinary Notes for the Farmer

Digestive Troubles in Cattle

Contributed by the
LIVESTOCK DIVISION

DURING the winter months when dairy cattle are being fed on supplementary feeds, more digestive trouble is likely to be experienced in the herd. Individual animals may be more susceptible to the change of diet, and may not be able to deal adequately with the winter feed provided. Occasionally, the quality of the feed may not be all that is desired, as so much depends upon the season.

The production of good quality hay is not always an easy matter, and much of the digestive troubles in cattle may be traceable to the use of mouldy or inferior hay. Low quality feed is not eaten readily by stock unless the stock are really hungry. Low quality feed is also more difficult to digest even by the normal animal in reasonably good health. The low nutritive value, together with the increase in the fibre content of poor quality hay tends to bring about a condition of impaction of the herbage in the first stomach.

To prevent such a condition arising farmers try to balance the diet by limiting the intake of the hay through the provision of roots or ensilage as part of the daily feed. Other measures used consist of spraying the hay with molasses in water, the use of green roughage, or the provision of salt as an aid to digestion.

The judicious balancing of the hay with roots is frequently quite satisfactory in preventing serious trouble. If either one is fed alone, or in excess, digestive trouble is likely to arise.

Signs of Impaction

The cow affected with impaction has a very full appearance and the left side of the abdomen covering the paunch has a solid, doughy feel. The animal may or may not be cudding, frequently there is a distinct grunt emitted from time to time, particularly on palpation. In such cases the muscles of the paunch tend to become weak in their action, or in the later stages lose their tone and become paralysed. Cudding ceases eventually and the animal becomes constipated and has a general sick appearance, with a dry nose and a dull eye. Active measures are necessary to deal with such an animal if recovery is to be expedited.

In the first place it is necessary to prevent the animal getting access to further supplies of the offending feed. A purgative drench should be given and it is advisable to rug the animal or provide suitable shelter from prevailing winds and rain.

The usual purgative drench for the dairy cow consists of about ¾-1 pound of salts to which a tablespoonful of ground ginger has been added. This is dissolved in a quart of warm water to which is added one or two pounds of molasses in water. The whole mixture is given at one time. Free access to water should be provided, but solid food should be withheld until rumination and cudding are once again restored.

After the purgative draught has been given, good results are obtained by following up with a stomach tonic such as gentian, ginger, and ammonium carbonate. Half an ounce of

WHITE & BLOOD SCOURS
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"MAX" Calf Scour Remedy.
8 oz. 7/6—plus postage 1/4
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each may be used as a powder to be dissolved in a quart of cold water or thin gruel and given two or three times daily until the bowels have acted and cudding has been resumed. The cow then requires some little time before being put back again on to the normal feed.

During this convalescent period a bite of fresh feed from a catch crop or an oaten or bran mash may be very beneficial. There is a tendency to overdo the drenching with salts if bowel action is not restored quickly. Some patience is necessary, as the digestive system of the ruminant is more complicated than that of other farm animals.

Need for Care

Occasionally cases crop up where in the first place the animal has all the appearances of impaction as described above. The animal, however, fails to respond to the treatment outlined and remains for days chronically affected. The grunt or lament becomes more marked, the animal is reluctant to move, particularly on the down grade, and eventually a swelling may appear between the lower jaw and along both sides of the neck down to the brisket.

These cases are rare and are typical of the animal which has swallowed a piece of baling wire, nail or other foreign body in the feed. The wire becomes fixed in the second stomach and penetrates in a forward direction towards the heart, setting up inflammation in the sac surrounding the heart. The swelling of the jaw, throat and brisket is a direct indication of impaired heart action. The animals frequently die and in many cases the foreign body has been demonstrated at post-mortem examination. Care should be exercised in handling baled hay to see that all pieces of wire are removed.

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Another type of digestive upset is experienced occasionally when the herd is fed too much roots without a balancing hay ration. In the early stages all that may be seen is excessive scouring due to the nature of the feed. Too many frosted roots or too much chou moellier or even any green crop such as maize may set up scouring.

Red-Water

The danger, however, of feeding these rations to excess is due to the possibility of the stock becoming affected with red-water. The affected animals pass urine stained red or even blackish in colour due to the breakdown of the red cells in the blood. There is considerable loss of blood in this way in a very short time, so that the condition must be recognised and prompt steps taken to avoid the loss of affected animals. Feeding on the diet responsible for the disease must be discontinued or reduced by the addition of hay to the diet.

Treatment of an affected animal consists of giving a purgative drench consisting of equal parts of salts and common salt. About ¾ to 1 pound of the mixture of salts and common salt is dissolved in a quart of warm water, and one tablespoonful of ground ginger is then stirred in. This mixture is then added to a quart of warm water in which from 1 to 2 pounds of molasses have been mixed. The whole is given as a drench, and all solid food is withheld from the animal.

Plenty of water should be available to the affected animal at all times, even salt water being used, so as to create a thirst and encourage the animal to drink plenty of fluid.

It may be necessary to repeat the dosage of molasses in water without any salts, daily, for a few days to ensure active bowel movements. Blood tonics in the form of some of the iron preparations are indicated in the case of weak animals. A nutritive laxative diet of bran mashes or gruel should be given to build up the strength of the affected animal. If taken in the early stages good recoveries can be expected.

Blood in Urine

This condition should not be confused with the passage of actual blood or blood clots in the urine. The latter occur occasionally in acute inflammation of the bladder, where there is further evidence of the inflammation by incontinence and the continued passage of urine in small quantities. In a few districts in New Zealand, the passing of actual blood in the urine, known as haematuria, is a separate disease confined almost entirely to certain localised districts. The disease is also more commonly seen in the winter months, but affected animals may be found when an exclusive diet of hay or ensilage is being fed.

Haematuria and red water due to excessive root feedings are two entirely separate diseased conditions.

Answers to Correspondents

Removing Proud Flesh

"TEAMSTER" (GISBORNE:—

I would like the following questions answered in your monthly "Journal of Agriculture":

(1) I have a draught mare with a proud flesh growth on the inside of her hind fetlock, probably caused through brushing. How can it be removed?

(2) How can I detect the difference between a cancer growth and a proud flesh growth?

LIVESTOCK DIVISION:—

(1) Powdered bluestone (copper sulphate) dusted on the "proud flesh" will dry it up after a few applications. However, if the trouble is caused by brushing it will recur unless the brushing can be overcome by shoeing.

(2) Cancer growth and proud flesh are not easily distinguished by the layman, but the former has a persistent growth and tends to break down in some cases, whereas proud flesh is part of the healing process of a wound and forms beneath a scab. In cases of doubt a small slice from the lesion could be wrapped in wadding

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148 ACRES. PRICE £2,800 GOING CONCERN, including 50 cows, 10 yearlings, 35 pigs, 2 horses, 3-cow milking plant, separator, electric motors in shed, 2 ploughs. Complete list of good farm implements. ONLY £1,000 DEPOSIT required, balance State Advances mortgage. A splendid farm, situated one of the best districts in the Near North. 25 acres good flats, balance undulating. 130 acres grass. Splendid all-electric bungalow 5 rooms, kitchenette, etc. Large garage, manure shed, 6-bail cowshed.

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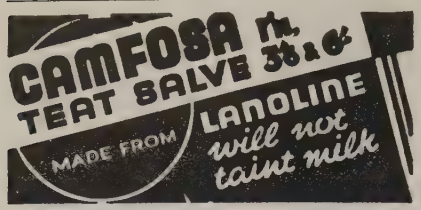
soaked in formalin or other preservative and forwarded to the Officer-in-Charge, Animal Research Station, P.B., Wallaceville, Wellington, for identification.



Bitch With Skin Irritation.

T.B.S. (Auckland):—

I have a bitch (short-haired) eleven years old. These last few years she has been greatly troubled with itchy patches which develop at the base of the tail and ultimately cover quite a fair-sized patch from the tail towards the shoulders. The hair on these patches becomes dull, lifeless, and matted, and ultimately comes out, leaving the skin bare. The bitch continually rubs herself, and in places rubs the skin off, leaving raw patches.

The last two attacks I have treated with raw linseed oil and sulphur mixed to the consistency of thick paint, and this treatment gives her great relief from the itching, and ultimately the trouble disappears and new hair grows. But this treatment is evidently not a cure. I dose the bitch regularly for worms with the tablets supplied at the yearly registration. Apart from this trouble she is particularly healthy and well preserved.

LIVESTOCK DIVISION:—

The most likely cause of the trouble you describe is either incorrect feeding or constipation or a combination of both. Generally speaking the dog should be given daily a mixture of well-boiled rice, raw mince, and about a tablespoonful of finely-chopped-up raw lettuce, cabbage, spinach or tomato juice; on alternate days give boiled fish or tripe and one day a week give boiled rice and gravy or milk.

One meal a day only should be given and immediately following this the dog should be taken for light exercise; this will bring about a more complete action of the bowel than would otherwise take place.

To allay the irritation a preparation known as "Odelyn" is very useful. Sphagnol in the form of an ointment or soap lather is also beneficial; it is difficult, however, to obtain either of these preparations at present and as a substitute Liver of Sulphur, one ounce dissolved in a gallon of tepid water and applied every second or third day will give relief.

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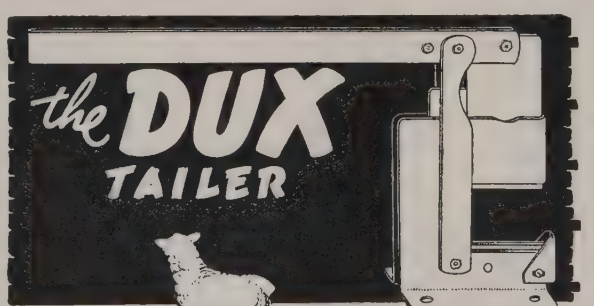

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"I used your Dux Tailer last season, and it gave great satisfaction, being easy and fast to operate, little blood, and the tail heals quickly, with a nice rounded end.
"I would like to mention that I returned this Tailer when first purchased, but a practical demonstration proved to me that the machine did the job in a quick and easy manner."

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Advisory Service on Veterinary Matters

Farmers are invited to submit inquiries connected with the health of their stock, and replies will be published under this heading.

Blood Poisoning and Tetanus After Docking.

"A.T.W." (HALCOMBE):—

Each year after docking I lose too large a proportion of lambs from blood poisoning and tetanus. I take all precautions in the way of fresh places for docking, bloodless castration, antiseptic on the tail wounds and instruments, and still it occurs. Certain paddocks are worse than others, so I have come to the conclusion that a serum for injecting at docking would be the only remedy. Is such a serum obtainable, and if so where can I get it?

LIVESTOCK DIVISION:—

As a preventive of these troubles the most essential precautions are strict cleanliness of the operating place, hands, and instruments. A temporary wirenetting pen in a clean, fresh area of the paddock is always advisable. Any instruments used should be sterilised by boiling before the commencement of operations, and during docking should be frequently dipped in some reliable non-irritating antiseptic. The operator's hands should be thoroughly washed before starting, and rinsed at intervals. When the lambs are let go after docking they should not have access to fouled ground under hedges, trees, etc., where they are liable to infect wounds, until they are healed.

Regarding use of serums and vaccines: Tetanus is rather uncommon and is unlikely to be responsible for many of the deaths. Serum as a preventive would be expensive and impracticable. Malignant oedema is the commonest form of blood poisoning. There is usually considerable discolouration of the skin and flesh surrounding the wounds. A certain number of cases of blackleg has occurred in lambs following docking (see the "N.Z. Journal of Agriculture" for November, 1941). Apparently quite satisfactory results have followed the use of a blackleg vaccine for prevention of this type of trouble. It is, however, necessary to give the vaccine about two weeks before docking is carried out, to allow time for immunity to develop.

It appears advisable to decide the cause of the deaths in the first place, and arrangements should be made to send a freshly dead lamb (a typical case) to the Superintendent, Animal Research Station, Wallaceville, Wellington, by the quickest available transport. In the event of the trouble proving to be blackleg, the question of vaccination could be considered. Vaccine could be supplied free from Wallaceville, though it would require a suitable syringe.

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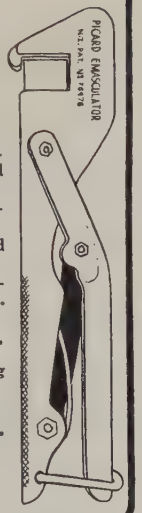

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When Foot-Rot — a chronic, infectious, ulcerative disease—appears in your flock, immediate steps should be taken for its control. Once the disease has developed it may spread rapidly, causing havoc amongst your flock. If your sheep are worth keeping they are worth keeping well. Use Jos. Ford's Foot-Rot Dressing, the liquid antiseptic for individual treatment. Economical and effective.

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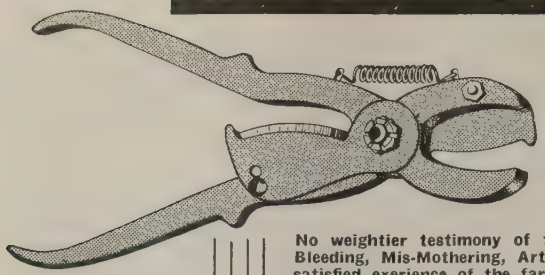
JOSEPH FORD'S FOOT-ROT DRESSING



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Lower Kokatahi.

Dear Sirs,—"I used the 'MOWAT' Tailer last year on all my lambs, and was very pleased with it in every way. As far as I am concerned, I shall never go back to the knife. I think, although it was a bad season, my fat lambs are better than ever before."
(Signed) J. W. KELLY.

Cheviot R.M.D.

Dear Sirs,—"I have used the 'MOWAT' Instrument on my lambs for the past two seasons, with very satisfactory results. I have tailed lambs of all ages, big and small, without any bleeding, and I can safely say it is outstanding. The lambs mother up as soon as let go, and continue to thrive just as if they had never been operated on at all." (Signed) J. BECKETT.

Wai Toi Toi, Taranaki.

Dear Sirs,—"I should like to say we used your Instrument in docking our 350 lambs without a single casualty. It is really effective in stopping the bleeding." (Signed) ALFRED SMITH.

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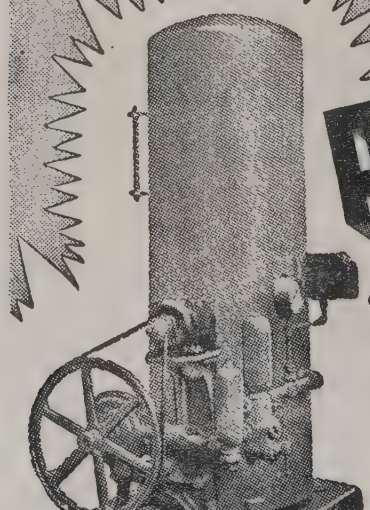

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The Weeping Willow

RECENTLY a farmer living at Whakaki wrote to us as follows:—

"I have overheard an interesting discussion on the origin of the weeping willow, and I would be very much obliged if you would endeavour to get an article on the subject into the 'Journal,' dealing with varieties and their uses and when and where it was first introduced into New Zealand, and also what country lays claim to it as a national tree."

Dr. H. H. Allan, Director of the Botany Division of the Plan Research Bureau, writes the following interesting reply:—

The Psalmist said, "By the waters of Babylon, there we sat down, yea, we wept when we remembered Zion. We hanged our harps upon the willows in the midst thereof." Many have associated the weepers and their harps with that most famous of weeping trees, the "Babylonian" willow. Cold science has shown that the osiers of the Euphrates do not belong to *Salix babylonica,* that the "willow" referred to was a poplar, and that the specific name enshrines a mistake. Yet, it may be that Celsius was right when he thought that the weeping willow was referred to by Job, who says of Behemoth, "The shady trees cover him with their shadow; the willows of the brook compass him about."

The homeland of the weeping willow is the western provinces of China, where Wilson, in modern times, found it still flourishing in the wilds. Very early brought into cultivation, it soon spread through Western Asia, North Africa and Eastern Europe. Towards the end of the seventeenth century, Tournefort, the famous French botanist and traveller, introduced it into Western Europe. It was first grown in England about 1730, and you have a choice of two stories.

Peter Collinson avers that it was planted by "Mr. Vernon, Turkey Merchant at Aleppo at his seat at Twickenham Park, where I saw it in 1748." The other story is that Alexander Pope was one day in the company of the Lady Suffolk when she received a parcel from Spain tied with willow twigs. Noticing that one twig was still alive, Pope begged it, and planted it at Twickenham, where it grew into the celebrated weeping willow of this villa garden. The Vernon story seems the better authenticated.

For a long time only female trees were known in cultivation, and they are still the more common. Many will recall with pleasure the charm of the weeping willow along the banks of the Thames above Richmond. The weeping willow became especially popular in Great Britain about 1823, when specimens were introduced from the tree at St. Helena that Napoleon loved and under which he was buried.

New Zealand Records

The first published record of the weeping willow in New Zealand was in 1882, when Cheeseman wrote, "The weeping willow was planted many years ago at the Mission Station at Tangiteroa on the Northern Wairoa River, and from branches and twigs floated down the river has established itself in profusion on the banks, often fringing them for miles, and in some places impeding the navigation. It is also naturalised on the banks of the Waikato, but not nearly to the same extent."

"Quite recently (1916)," says G. M. Thomson, "five weeping willows were cut down in Eden Crescent, Auckland, which were brought out by Major Mavis, of the Commissariat Department, about 1861. The vessels coming out touched at St. Helena, and the cuttings were taken from the trees growing at Napoleon's grave; they were planted in a box and so transferred to Auckland."

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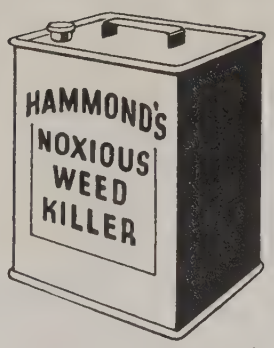

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There are few places in New Zealand that have not now their stretches of weeping willows.

The weeping willow is too familiar to need any description, and there are some most magnificent specimens in our country. There are, however, certain varieties and hybrids that may be met with, and there are now rather numerous horticultural forms on the market, propagated by cuttings. Some of the hybrids are much hardier than the weeping willow in its pure state.

The variety *crispa* (or *annularis*) has the leaves folded and spirally curved, and is much less handsome than the type. *S. sepulchris*, a hybrid with the white willow, is of more vigorous growth and of a less weeping habit. *S. blanda*, the Wisconsin weeping willow, a cross with the crack willow, has rather broader leaves, and grows to a great size. Another cross with the white willow is *S. salamonii*, originally from France. Only the final branchlets are truly pendulous.

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The Technique of Plough Setting

IN publishing "The Technique of Plough Setting," Messrs. Reid and Gray, of Burnside, Otago, have performed a real service to the farming community. The subject is competently and comprehensively covered, and, as stated by Mr. W. W. Mulholland, Dominion President of the New Zealand Farmers' Union, in his preface, the booklet should be "a valuable contribution to progress in New Zealand."

That the principles of ploughing as recommended in this booklet are not — as pointed out by the writers— untested theories, but are based on the collective experience of practical men, will at once be obvious to the initiated, and in this lies much of its real value. One is immediately impressed by the lucid way in which some rather difficult subjects have been dealt with by the compilers.

Instructions are set forth in plain straightforward language, and if studied in combination with the photographs or drawings, which have been included where considered necessary, the meanings it is intended to convey are in the main abundantly clear. The "Technique of Ploughing" supplies what those interested must surely look upon as a long-felt want, useful not only to the beginner, but of interest also to the man of experience in ploughing, containing as it does information to which in the ordinary way he may not have ready access.

In my opinion a very useful booklet indeed, with a vein of rather subtle humour running through some its its passages.

—J, G. McKAY, Fields Instructor, Christchurch.

Cress in Stack Beds

SEVERAL times during the past two or three seasons farmers in the Tauranga district have been graded down for cressy cream. Often considerable indignation has been expressed and the claim made that there is no cress on the farm.

Certainly, in many cases, the paddocks appear at first glance to be free from cress, with a dense and vigorous sward of grasses and clovers. Upon closer investigation, however, one often finds an old stack bed in the paddock from which the tainted cream was produced. When this area is examined there is usually a prolific growth of cress. The grass on the area covered by the stack has been killed, and the resultant bare ground has given weeds of all descriptions a wonderful opportunity to develop. As such conditions are ideal for cress development, this weed is often to the fore, with disastrous results to the cream grading.

There is an idea among certain farmers that cress on the small area involved would be insufficient to do any harm, but when one remembers that one ounce of cress can give strong taint to a cow's cream, the fallacy of this theory becomes apparent.

Consequently a watchful eye should be kept on old stack beds in the spring for signs of cress, and if this weed shows up at all in any quantity it should be pulled out, or the area fenced off from stock. Remember, a cow does not have to get her paunch full of cress to produce tainted cream. Very little cress is needed to give trouble, and it is infinitely better to spend a little time removing the cress than to be graded down for taint, or even have the cream rejected altogether.

—A. V. ALLO, Instructor in Agriculture, Tauranga.

Importance of Clean Drains

ON all farms, where open drains are required for excess water removal, there is a tendency for them to become blocked with weed and grass growth during the summer and autumn. During this period, as there is seldom much excess water in the drains, this condition does no harm. In fact, in soils that are liable to crack badly under hot, dry conditions, the vegetation probably does much good by preserving the drain walls in sound condition.

When wet weather sets in, however, a drain must be fully efficient in order to handle the amount of water that it will be called upon to convey. It cannot do this if it is full of vegetation as shown in figure 1. Consequently drain cleaning must be resorted to in the late autumn and early winter in order to put these channels into good condition.

Fig. 1.—The flow of water through this drain is impeded by vegetation.

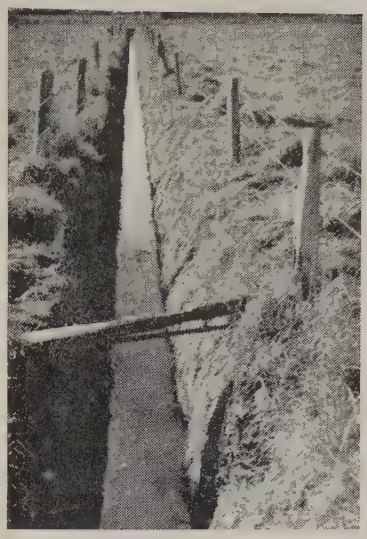

Fig. 2.—Here the water has every chance of getting away.

A handy implement for this work is a round mouthed shovel, well sharpened and with both edges filed to a reasonably keen edge for cutting down weed and grass growth. With such an implement drain banks can be cleaned and any spoil removed without having to take out any other tools, although a hay fork is also useful for removing light but bulky vegetation.

All drains should approach the wetter months in the condition shown in figure 2. At the present time, with the easing of work among the herd more opportunities of doing these tasks are available and should be seized in the interests of better farm conditions. After all, much of farming success depends upon drainage efficiency, without which manuring, good seeds mixtures, and many other accepted practices in good farming cannot succeed.

—C. WALKER, Instructor in Agriculture, Thames.

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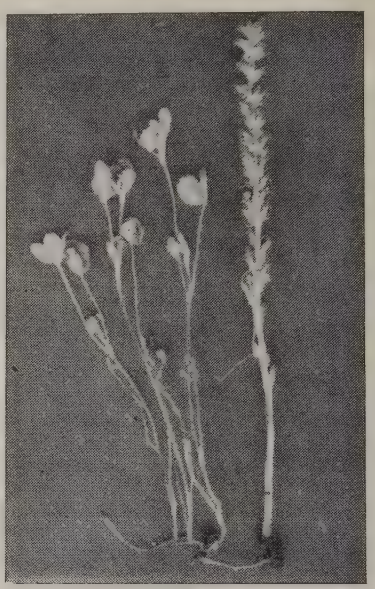
Parasitic Habits of Broomrape

ALTHOUGH popularly regarded as just another weed, broomrape (*Orobanche minor*) is not a complete plant in itself, but is a true parasite which can survive only by extracting nutriment from the living tissues of a normal plant. In this instance the parasite grows on the roots of a number of plants, particularly clovers, and the illustration shows the actual attachment of the broomrape to the root of a red clover plant.

Broomrape has no leaves or other green parts that would enable it to



By carefully washing away the earth from the clover roots the attachment of the broomrape can be clearly seen.

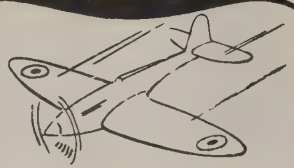
[N. Lamont, photo.

manufacture its own food supplies, but consists solely of a fleshy brownish stem up to 18 inches in length, the upper half of which is crowded with brownish, curved, tubular flowers about half an inch long.

These flowers produce a very large number of fine seeds, which germinate in the soil and send out roots, which may penetrate the roots of clovers and other "host" plants and draw nutriment from them.

Fortunately, clovers, at least, do not appear to be seriously reduced in vigour by the parasite, and affected plants appear little the worse for its presence. Practically the only method of control that can be recommended is to pull up the stems before the seed is ripened and carry them away in a sack for burning in order t reduce the amount of rein festation that can occur.

—N. LAMONT, Instructor i Agriculture, Mastertor



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Radio Broadcasts

RADIO Talks to Farmers will be given from Station 1YA, Auckland, at 7.1 p.m. on the following dates:—

July 27.—"Young Farmers Club Session," Mr. E. B Glanville, Provincial Secretary, Auckland Y.F.C. Council.

August 3. — "Nutrition o Dairy Stock," Mr. C. E. Ballinger, Animal Research Station, Ruakura.

August 10.—"The Growing of Potatoes," Mr. E. B. Glanville, Instructor in Agriculture, Department of Agriculture, Auckland.

August 17.—"The Brooding of Chickens," Mr. E. C. Jarrett, Poultry Instructor, Department of Agriculture, Auckland.

PIG INDUSTRY BROADCASTS

UNDER the auspices of the District Pig Councils concerned broadcasts will be delivered in August as follows:—

1YA, Auckland.—August 20, 7.15 p.m.: "Litter Production," by C. P. Harington, Supervisor, Waikato District Pig Council.

2YH, Napier.—August 13, 7.30 p.m.; "Cropping for Pigs," by I. H. Owtram, Supervisor, Tairawhiti District Pig Council.

2ZA, Palmerston North.—August 18, 8.30 p.m.: "Whey Feeding," by L. L. Marsdon, Supervisor, Wellington District Pig Council.

4YA, Dunedin.—August 10, 7.15 p.m.: "Concrete for Piggeries," by N. Macdonald, Supervisor, Otago and Southland District Pig Council.

Orchard Notes

Pruning, Spraying and Manuring

EVERY effort should be made to complete the work of pruning before the spring spraying season commences.

The gathering up and destruction of all prunings should be undertaken as the pruning is proceeding or as soon as possible after it is concluded. By attending to this, many pests and diseases, which might otherwise prove a source of trouble, are effectively destroyed.

Consequently the overhaul of the spraying outfit for the new season's spraying should receive attention at the earliest opportunity. Worn-out parts should be replaced and the engine and pump cleaned and oiled to save loss of time when operations actually commence. Spray supplies for the season should be ordered and delivery arranged well in advance of the time they are likely to be required.

Scale insects and Red Mite will be the most serious insect pests to contend with, and for this purpose Red Oil at strength 1:20 is advised, using it before bud movement begins in order to avoid damage. San Jose is the most important scale insect to be dealt with. The complete destruction of the eggs of Red Mite is essential to secure freedom from this pest during the early growing period. Complete coverage is required for effective disease eradication and prevention, and every effort should be made to see that no part of the tree is missed and that sufficient gauge pressure is maintained to ensure the spray being driven to all parts of the trees.

Peach Curl

As a preventive of Leaf Curl and other stone-fruit diseases Bordeaux Mixture at strength 5:4:50 should be applied when the fruit buds begin to swell and the bud scales lift. One spray at this strength well applied will be effective in coping with leaf-curl on the majority of the varieties grown.

Growers will be well advised to obtain as much knowledge as possible of the various pests and diseases found in the orchard in order to do the work more intelligently when these pests and diseases appear. The life history, method of attack, seasons when prevalent, whether chewing or sucking insect, fungus diseases or bacteria should be known. With this knowledge the orchardist will be better able to decide the most suitable spray to use. The spores of fungus diseases are often invisible to the naked eye and, consequently, may be on the tree before any outward signs are noticeable. When once established these diseases are difficult to eradicate.

Manuring

Fruit quality and yield are largely dependent on the manurial treatment given. Large quantities of plant food are withdrawn from the soil every year, and unless this food supply is replaced by judicious manuring both growth and yield will suffer. Manurial programmes differ somewhat in different districts according to the nature and fertility of the soil, but in soils known to be insufficiently fertile money spent on manures and fertilisers will give better results in tree and fruit production in future. What is known as complete manure is made up in the main of three substances—nitrogen, phosphoric acid and potash. Generally speaking, any nitrogenous manure produces growth and heavy foliage and, consequently, can be used on trees that have become debilitated. An excess of nitrogen is liable to cause sappy growth, unripened fruit buds and fruit of poor colour and soft texture. This fruit usually breaks down easily after a relatively short period of storage.

Good results have been obtained from the use of potash during the past

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few seasons. It is claimed that by the use of potash much better quality is obtained, the colour and texture being superior to that obtained when potash is not included in the mixture. Fruit buds for the following season appear much healthier for its use, and the fruit produced will hold up longer in storage and is less liable to bruising during transport. While the quantity of manure to be used differs in different parts, the average rate of the mixture of a complete manure should be from 3 to 6 lbs. per tree according to age, growth, cropping, and general condition. As a general rule, approximately one-half the quantity should be phosphoric acid in the form of superphosphate, one-quarter potash in the form of either sulphate or muriate, and one-quarter nitrogen in the form of ammoniam sulphate.

Grafting

Scions required for grafting should be selected at this season of the year. These should be taken from well-grown trees of good fruiting habits and should be clean and healthy wood of the previous season's growth. As these scions will not be required immediately for re-working purposes, they should be kept in good condition by being "heeled in" or placed in a shallow trench, covered with soil, in a sheltered, cool position until required.

Planting

Fruit trees intended for new plantings should be "heeled in" firmly when received and held until the soil in the orchard is in a suitable condition for planting. At the time of planting an application of blood and bone manure at the rate of about ½ lb. per tree will help to give the trees a good start in the spring.

Attention should be given to shelter belts where orchards are planted in exposed positions. Many existing shelter belts could be conveniently topped to allow more light and air in the orchards when necessary. The planting of shelter belts too close to the trees in the orchard makes proper cultivation impossible and reduces the fruit trees in the outside rows to a condition of very little value. An application of manure when planting shelter trees and frequent hoeing during the first season or two will result in better growth.

Existing drains and the digging of new ones where required in the orchard should be attended to. Superfluous water must be carried off the orchard as soon as possible for the welfare of the trees and to prevent their suffering from the effects of "wet feet." This can be accomplished only by an effective system of drainage.

—G. STRATFORD, District Supervisor, Dunedin.

Citrus Notes

Grading and Packing of Grapefruit

THERE are three grades recommended for marmalade oranges and for New Zealand grapefruit—extra fancy, fancy and commercial. Fruits of more than one grade may be packed together, provided there is not more than 20 per cent. of a higher grade than the grade mark on the package, and no fruit of a lower grade. For those doing grading the following points should be noted:—

Extra fancy—slight blemish 5 per cent., counts up to 198 to the bushel (marmalade), 234 N.Z. grapefruit.

Fancy—blemish 10 per cent., hail mark, ½in. diameter in aggregate, russet 15 per cent., counts to 234.

Commercial — more blemish than fancy, counts to 234.

The most suitable case for marmalade oranges or for New Zealand grapefruit is the bushel case, for which the following chart has been compiled. With the case opened the wide way, i.e., width 11½ in., all fruits are packed on the "cheek" or side of the fruit and not on the flat.

Style Crosswise.	No. of Rows Lengthwise.	No. of Layers.	Count.	Size in ins. Variation upwards.
2—1	5—5	3	45	4¼
2—1	6—5	3	50	4
2—2	4—3	4	56	3⅞
2—2	4—4	4	64	3⅝
2—2	5—4	4	72	3⅜
2—2	5—5	4	80	3½
2—2	6—5	4	88	3⅜
2—2	6—6	4	96	3¼
2—2	6—7	4	104	3⅛
2—2	7—7	4	112	3
3—2	5—5	5	125	3*
3—2	6—5	5	138	2⅞
3—2	6—6	5	150	2¾
3—2	7—6	5	163	2⅝
3—2	7—7	5	175	2½
3—2	7—8	5	188	2½*
3—3	5—6	6	198	2⅜
3—3	6—6	6	216	2⅜*
3—3	6—7	6	234	2¼

* Neat sizing.

Wrapping

Wrapping is not compulsory, but is recommended for New Zealand grapefruit if being transported out of a citrus growing district. Wrapping papers 9 x 9 in. are used for sizes 163-234; 10 x 10 in. sizes 104 to 150, and 11 x 11 in. for sizes up to 96 to the bushel case.

Citrus fruits being sold direct to a factory or packing establishment only require the registered number branded on the case. "Gift fruit" should be clearly branded accordingly.

Effect of Wind

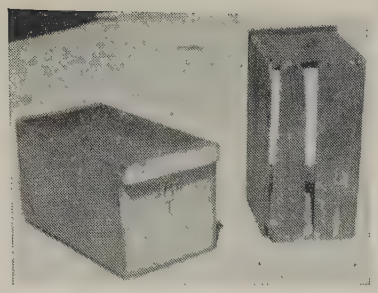
The direct effect of wind on fruit orchards is well known. The indirect effect of wind is not sufficiently realised. Citrus trees, being evergreen, are constantly transpiring large quantities of water from their leaves. This water is absorbed from the soil by the fine root hairs, and is conducted through the vessels of the central cylinder and given off by the leaves. The drier the atmosphere and the greater the air movement, the greater will be the quantities of water transpired. This is immaterial when rainfall is adequate over the winter months, but when soil moisture must be conserved in summer, transpiration is an important factor.

Shelter, then, becomes of great importance through re-

ducing air movement and thus reducing transpiration.

Adequate shelter is a key factor in successful citrus production, and now is the time to plant shelter. Even if labour shortage prevents the commercial establishment of citrus trees, the planting season should not be allowed to pass without the consideration of shelter belts for future orchard areas or around those parts of the orchard still inadequately sheltered.

An orchard shelter belt should be quick growing, dense to ground level and should require the minimum of work after planting. Successful shelter belts in citrus areas are *Cupressus lawsoniana, Bambusa vulgaris, Hakea siligna, Acmena floribunda,* black wattle or seedless barberry.



A good and a poor orchard field case.
[Photograph by H. P. Bryan.

In the selection of citrus trees for planting, attention should be paid to general vigour with a good fibrous root system without any markedly bent main roots known as "S" or bench roots and without any severely injured roots caused by lifting. The trunk should be strong and straight, preferably 15 inches between bud union and fork and the bud union at least 3 inches clear of the ground. The purchase of uniformly good trees from carefully selected budwood is an important factor in successful citrus orchard establishment.

—A. M. W. GREIG, Citriculturist, Auckland.

Cool Storage Notes

Storage of Granny Smith Apples

AS oil wraps were in short supply this season, it was found necessary to cool store a quantity of Granny Smith apples in plain wraps. This procedure will necessitate a careful inspection of the cool storage stocks from July until the end of the season, as this fruit will require to be placed on the market and reach the consumer before scald or external discolouration develops.

The tendency of Granny Smith apples when unwrapped or in plain wraps to develop scald or external discolouration, is generally found to commence about the middle of August, when it rapidly manifests itself after the fruit is removed from cool storage and becomes more severe as the season advances.

Oil wraps have given almost complete control of superficial scald and lenticel rot development after eight months in cool storage at a temperature of 32 deg. F. and relative humidity of 90 per cent.

A cool storage experiment with Granny Smith apples in plain wraps, carried out by Mr. J. D. Bryden at the Bathurst (New South Wales) Experimental Farm in 1941 season, and published in the Agriculture Gazette of New South Wales, Vol. LIII, Part 4, April, 1942, gave some interesting results.

The fruit for the experiment was harvested on April 9. The size of the fruit was 3in. Temperatures maintained during storage 33-34def. F.

The points of importance brought out in the tests were:—

(1) No superficial scald developed in Granny Smith apples in sulphite wraps until four months in storage at 33-34 deg. F.

(2) As the storage period extended there was a progressive increase in severity of superficial scald in both amount and numbers of fruits affected.

(3) Delay in storing had a marked influence on scald development in Granny Smith apples.

(4) There was a complete absence of scald in Granny Smith apples stored in oil wraps for eight months.

The results of the experiment agree with findings of the tests which have been carried out over the past four years by this Department, working in conjunction with the Department of Scientific and Industrial Research.

—A. A. POWELL, Cool Storage Officer, Wellington.

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Plant Only the Best Strains

"Nothing will ever be attempted if all possible objections must be first overcome."—DR. JOHNSON.

IN accordance with suggestions made in a recent issue of the Journal, for consideration of the past season's gardening activities, it is assumed that the garden plans for next season's sowings and plantings have been determined, and the immediate concern is that of purchasing seeds and plants of different varieties of vegetables. This being so, it is important that seeds of the best "strains" of the respective varieties required should be obtained. Experience justifies the statement that there is often as great a difference between "strains" of the same variety as there is between varieties.

The aim of the home gardener should be to obtain from his garden the greatest quantity of the highest quality vegetables the area of land is capable of producing. To achieve this three major factors are involved:— variety of vegetables grown, strain and cultivation.

It will be interesting to note—in only a few instances- -what has been achieved in recent years by plant breeders whose energies have been directed towards improvements in productive capacity of vegetable plants. The figures after the name of the plant indicate the percentage increase.

When In Trouble

When results from growing your own seeds and growing your own plants are unsatisfactory and you are worrying over the probable cause, why not consign your troubles to the Director of the Horticulture Division, P.O. Box 3004, Wellington? He may be able to assist you. Write him now.

Brussels sprouts, 50 per cent.; runner beans, 100 per cent.; peas, 50 per cent French beans, 50 per cent tomatoes, 25 per cent.; spinach, 200 per cent. ("Gardeners' Chronicle.")

This increase in production shows how important it is that the seeds of only the best strains of the required varieties should be purchased. The publishers of some seed catalogues indicate the superiority of one strain over another of the same variety of vegetable.

Cultivation

This does not mean just turning over the soil and then sowing the seeds in a row or setting out plants. Granting everything else to be all right, the success or failure of the expected crop will largely depend on the cultural operations adopted before and after sowing or planting. These operations should be considered as being fundamental to successful vegetable production.

Deep digging and regular cultivation serve to promote good drainage and generally improve the tilth of the soil. It will at all times be beneficial to poor or medium quality soil and will improve the productive capacity of good soils. Provided that suggestions previously made for "throwing" up the soil so that it would be exposed to the "weathering" action of winter conditions have been observed, it should, following a period of reasonably dry weather, be in a more or less friable condition and suitable for gardening operations.

August may, in a general sense, be looked upon as the time for renewed activity in the home garden. During this month the first real efforts towards the season's vegetable production will be made. The execution of the pre-arranged garden plan will be started.

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What to Do in the Home Garden Next Month

Summary of Operations During August

SEEDS TO SOW.

Broad beans, beetroot, carrot, cress, leek, mustard, onions, peas, parsley, rhubarb, silver beet, spinach, turnip.

UNDER GLASS.

Cape gooseberry, cucumber, pepper, tomatoes (for outside planting).

SUCCESSIONAL SOWINGS.

Lettuce (Webb's Wonderful, Success), spring onions (White Lisbon), radish (Long Scarlet, French Breakfast), spinach (prickly or winter).

PERENNIAL CROPS.

Asparagus—Transplant one-year-old roots.
Rhubarb—Single "buds" not later than August.

CROPS IN SEASON.

Greens—Spring cabbages (late Feb. and March), savoy cabbages, silver beet (Oct.-Nov.), borecole, broccoli, Brussels sprouts and cauliflower (late Oct., early Nov.).
Root Crops—Beetroot, carrot (all year round), parsnips (Oct. to Dec., main crop), artichokes (plant tubers Oct., Nov.).

It should, however, be remembered that the ultimate cropping results may, by vigilant attention to detail and proper cultural practices, vary by as much as 100 per cent. both in quantity and quality.

In view of the present economic conditions it is highly desirable that every effort should be made to obtain the maximum vegetable production from the garden. The accomplishment of this would materially assist in maintaining the health of the people and would ease the strain which is being placed upon commercial vegetable production.

Asparagus

August is the best time for planting this highly desirable vegetable. One-year old crowns are best and should be specially selected for vigorous growth. This is of special importance when it is realised that no other vegetable plant is destined to remain so long in the same part of the garden. A well-made and properly cultivated asparagus bed, set with first quality crowns of the Mary Washington or Martha Washington variety, will continue to produce good edible spears for 15 or 20 years.

The crowns should be planted in a trench in the bottom of which has been placed a good dressing of stable or farmyard manure. This is best trodden down firmly before any soil is put on top of it, after which the crowns may be set. The trench should have sufficient depth to allow for soil being put on top of the manure and still have the crowns 6 to 8 inches below surface level when planted. Finally, when planting is completed, the crowns should be covered with only two inches of soil.

The trench should not be filled in immediately. If allowed to remain open it will gradually fill up by subsequent cultivation.

On established beds, all growth may now be removed, and a thorough cleaning-up given. When this has been done, a liberal dressing of old cow or fowl manure should be applied and lightly worked into the soil. So soon as the growth starts, an application of nitrate of soda at the rate of ¼ oz. to each crown will be of considerable benefit to the young spears. This should be applied only after watering or after rain.

Seasonal Don'ts

Don't

hesitate to plant your garden to the limit of its possible vegetable production. Consumption is simple, production is the trouble.

Don't

buy cheap seeds, they are invariably very expensive.

Don't

sow seeds "on the blind." Try a germination test. This will often prevent disappointment.

Cabbage

At the beginning of August, Enfield Market may be set out, but later, Golden Acre—a summer variety—should be almost ready for transplanting. Fourteen inches between the plants in rows two feet apart will be sufficient distance to allow, in a highly fertile and well limed soil.

Cauliflower

Plants may now be set out in rich well prepared soil, but care will be necessary to prevent the young plants being checked in growth. This often results in "buttoning" or bolting to seed. A sheltered part of the garden is recommended. If plants are being purchased, Early London, Early Mammoth or All Seasons are recommended varieties. The same distance should be allowed between the rows as that recommended for cabbages, but 18 inches between the plants will be necessary.

Onions

Plants from autumn-sown seed may now be set out, and should not be delayed beyond the middle of August. The production of high quality bulbs which will remain in good condition well into the spring of next year can only be accomplished provided that great care is taken in the preparation of the soil, that the plants are set in the proper manner and at the correct distance apart, and that a suitable fertiliser is applied in the necessary quantity.

Early preparation of the onion bed is desirable, as it allows time for the soil to become consolidated, thus bringing about the compact condition so necessary for good onion growth. The soil must be worked to a fine tilth, and, should it be of a light nature, rolling would be an advantage.

In addition to bonedust broadcast over the bed at the rate of 3oz. per square yard, a liberal dressing of unleached wood ashes may be applied and worked into the soil before planting. In the home garden it is not necessary to have the rows wider spaced than 12 inches, nor the plants set at a greater distance than 4 inches. These distances will give excellent results with most household varieties, particularly Pukekohe Longkeeper.

Setting the plants with the bulbs deep down in the soil is not recommended, and care should be taken to see that the roots, which have been trimmed square, are set straight down. By this observance to detail the plants, which at first may topple over, will soon regain their upright position.

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Carrots

If it has not already bee done, a bed of an early va iety should be sown witho further delay. Successiona sowings of carrots at sho intervals is not necessary i most parts of the Dominio as, provided the soil is nc infested with carrot fly, th early crop will keep in goo condition for a considerabl time. Earlykrop and Marke Garden are recommende varieties.

Parsnips

For early use a bed o parsnips may be sown i August; the main crop late Parsnip seed should not b sown as thinly as the seed of most varieties of vege tables, as the germination i often disappointing. Hollow Crown is the variety recom mended. As with carrots, 1 inches between the rows i all that is necessary. In many home gardens early carrot and parsnips are often sown in rows 10 inches apart. This close sowing requires more care in subsequent cultiva tion, but the space saved in the garden may be well worth the extra labour.

Lettuce

Now and during the whole of the vegetable growing sea son, supplies of lettuce should be maintained in the garden. The seed is best sown in a seedling box from which the young plants can be easily set out. To produce the crisp, tender heads which are so desirable, the soil should be well prepared and a heavy dressing of stable or farmyard manure dug in a short time before planting takes place. As soon as wrapper leaves begin to turn in and form heads, a "pinch" of nitrate of soda should be applied to each plant—after watering—and lightly mixed with the soil.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

Seasonal Work for Beekeepers

Moving Bees to New Locations

THE best time to move bees in New Zealand is in early spring when the bees have begun to take interest in the new season's activities and there is little brood in the hives to be injured. Shifting hives of bees long or short distances in the spring may be carried out with perfect safety, provided adequate ventilation is allowed.

It is bad practice, however, to move bees long distances while they are in their winter cluster. Where bees have been unduly active during the winter months and are unable to take a cleansing flight owing to close confinement, a condition known as dysentry may develop within the colony, which usually results in heavy losses.

When shifting bees short distances, it is not necessary to use top or bottom screens on the hives. The supers, lids, and floor boards should be secured with either crate staples or wooden slats sufficient to hold a complete hive firmly together and not allow the escape of bees. Finally, the entrance of each hive may be closed with a piece of wire gauze, which can be conveniently removed when the hives have been placed on their permanent stands at the new location. The removal of the crate staples or wooden slats should not be attempted immediately the bees are released, as they are then in no mood for further disturbance, and should be allowed to settle down as quickly as possible.

In the early spring when the colonies are of medium strength and the hives are to be moved only a few miles, the entrance to each hive may be closed with a wad of green grass or sacking, which is easily and quickly pulled away with a minimum of disturbance to the bees after all hives have been placed in position. At this time of the year there is usually sufficient ventilation through the cracks and joints of the hive without the use of screens.

Permission Required

The attention of all beekeepers is drawn to Section 7 of the Apiaries Act, which deals with the moving of bees and apiary appliances from one location to another. No colonies of bees may be moved without the written consent of an inspector. This precaution is taken to prevent the transfer of diseased bees to the neighbourhood of clean apiaries, as much harm has been done in the past by such practices.

Any beekeeper who fails to obtain a permit before moving colonies of bees more than ten chains, or fails to observe the conditions imposed by an inspector, is liable to a fine of £25. The allowance of a range of ten chains is mainly to facilitate local readjustments of apiary sites.

Where beekeepers desire to move their bees long distances, and they have no experience of this work, they should consult the Apiary Instructor for their district before doing so for suitable instruction.

—T. S. WINTER, Senior Apiary Instructor, Wellington.

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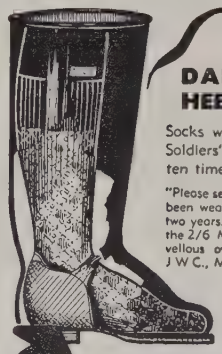

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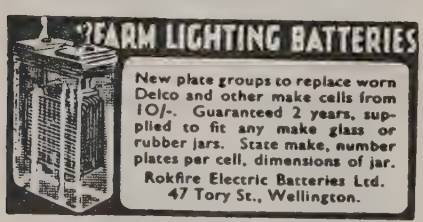
THEORY AND PRACTICE OF FEEDING

PART III. (continued)

By F. C. BOBBY,
Superintendent of Poultry Husbandry, Wellington.

ANY description of the practice of poultry feeding would be incomplete without direct reference to foods available for poultry and rations which may be recommended with confidence. Under normal conditions the range of foods used by New Zealand poultry keepers is not wide; in fact, is restricted by comparison with many other poultry-producing countries. This is not necessarily a disadvantage, although a lack of knowledge of alternative foods in wartime may lead to concern. For this reason a wider list of foods than is customarily used is given hereunder, with short descriptions of their comparative uses for poultry.

POLLARD: In normal circumstances pollard forms the basis for most laying mashes, being used in amounts up to 65 per cent. of the total. It has little or no value as a protein supplement for egg production and provides mainly carbohydrates for supplying heat and energy. It has the advantage of being comparatively low in fibre.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Need for Care

WHEATMEAL: This has exactly the same feeding value as wheat and differs from pollard in that it contains an appreciably higher percentage of carbohydrates. In practice it is found that, while it will act as a good substitute for pollard, care must be exercised in feeding it to breeding stock owing to the tendency to put fat on these older birds. Furthermore, owing to the starchy and floury nature of this meal additional bulky food such as bran must be included to avoid "stickiness" or a "tacky" condition of the mash when moistened with water.

This also applies to chicken mashes containing this meal even when fed dry. If the mash is too fine, due to the presence of a high percentage of finely ground wheatmeal, trouble may be experienced with such a mash clogging on the beaks of young chickens. This will be particularly noticeable if the chickens contract a cold and their nostrils are filled with mucus.

When using wheatmeal to replace a proportion of pollard or when completely replacing pollard, the protein supplement—i.e. meatmeal, milk powder, etc.—should be increased by a few per cent. to balance the mash.

BRAN: The inclusion of bran in a mash is the most popular method of adding bulk and thereby "opening up" the finer ground meals. It is particularly suitable for this purpose and a difficult meal for which to find a substitute. Its actual feeding value as compared with other poultry foods is not great, but its physical properties are of considerable importance. In addition, it has a valuable mineral content.

BARLEY MEAL: Barley meal has much the same value as wheatmeal, being high in carbohydrates or starchy material and low in protein. It has, however. the disadvantage of a high fibre content, and upon the efficiency of grinding will depend the value of a sample of barley meal for poultry. This particularly applies to chickens, where the hard fibre from the husk of the grain can cause crop trouble unless well ground.

Like wheatmeal, well ground barley meal may act as a part substitute for pollard. Since it is known to be a good meal for fattening, the quantity fed to breeding stock should be strictly limited.

MAIZE MEAL: This is another valuable food for poultry, being highly digestible and palatable. It should be noted that maize meal is low in protein and minerals, and high in carbohydrates. In all cases except for fattening poultry, yellow maize and not white maize should be used. Yellow maize gives a deeper colour to the yolks of eggs than wheat, barley and oats or the meals from these grains. Yellow maize or maize meal has also a valuable Vitamin A content, desirable for both young and matured stock.

Maize meal can only partially replace pollard when

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the latter is in short supply, but it is an excellent addition to any laying mash, especially during the winter months.

Qualities of Oats

GROUND OATS: The value of oats or ground oats to poultry depends upon the class of oats used. Heavy oats—i.e., high proportion of kernel or hull or husk—are a valuable poultry food, but light oats have indeed a poor feeding value, being excessively high in fibre from the husk. Once again the value of ground oats depends to a marked extent upon the grinding. Thus for poultry feeding, when ground oats are used, this meal must be well ground and made from a heavy oat. Ground oats—usually referred to as Sussex Ground oats—is a popular feed for poultry in England, although the amount used is normally restricted to a maximum of 20 per cent. in a laying ration.

LUCERNE MEAL: In discussing lucerne meal it is necessary to differentiate between the meal and lucerne chaff. A good sample of the former is made from lucerne when it first comes into flower, and while it is still succulent. This meal is usually fine in texture, having the maximum of leaf and flower with the minimum of hard stalk. Lucerne chaff on the other hand is cut, cured and harvested when the plant is fully grown and the stalk has become hardened.

For poultry feeding purposes the meal has a definite value, whereas the chaff is comparatively valueless and may even be injurious where the amount of woody stalk is present in quantity.

Lucerne meal is a valuable substitute for green food, supplying both Vitamin A and colouring matter for the yolks of eggs. It should also be noted that it has a medium protein content and is rich in minerals. An average good sample of lucerne meal cannot be used as a direct substitute for bran, as it is not bulky enough to "open up" effectively the finer meals included in laying mashes.

Lucerne meal is not particularly palatable to poultry, and should be introduced gradually into a mash fed to birds which previously have not received this meal. In any case a limit of approximately 15 per cent. should be recognised, while 10 per cent. is a reasonable amount to include in a laying mash when green food is in short supply.

Protein and Oil

MEAT MEAL: This is included in poultry mashes for its protein content. Meat meal contains other food essentials such as oil, but it is the protein content which is of importance. It is, therefore, incorrect to state that a mash including 8 per cent. meat meal contains 8 per cent. of protein—a form of statement sometimes heard. Since meat meal is the most popular protein supplement food the following points should be understood when purchasing this meal:—

1. The protein content should be ascertained. Commercial meat meals contain approximately 60 per cent. protein, but higher grades are met with. Obviously if 10 per cent. meat meal containing 60 per cent. protein is required in any given laying mash, a lesser quantity, say 8 per cent., of a 70 per cent. protein meat meal will be just as effective. Similarly, if the meat meal contains only 45 per cent. protein—as in the case of meat and bone meals—then up to 15 per cent. of such a meal is required for the equivalent of the 60 per cent. protein meat meal referred to in the first instance. It is of considerable importance to know the protein content of any meat meal purchased.

2. Meat meals vary considerably in oil content. It is desirable to feed a meat meal with a **low** oil content, preferably not above 10 per cent. Meat meals with a much higher oil content are met with in the Dominion, and in many instances cause digestive troubles. It is of importance to purchase a meat meal with a guaranteed **low oil content.**

3. All too frequently meat meals are found containing an appreciable amount of fibrous material, i.e., hair and wool. This also is a bad fault and may cause digestive troubles.

It is of interest to note that blood meal, which has a very high protein content, is not suitable for poultry, being unpalatable and of comparatively low feeding value.

For Young Stock

MILK POWDERS OR LIQUID MILK: Skimmed milk in liquid form or as a dried powder forms one

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of the most satisfactory supplies of protein available to the poultry keeper. The protein concerned is highly digestible and particularly suitable for young growing stock. The use of milk or milk products is usually governed by the questions of availability and cost. Although the cost of milk powders is normally high it may be stated that on an economic basis these products are still of satisfactory value for chickens for at least the first 6-8 weeks of rearing. They may be used in conjunction with meat meal in reduced quantities. It is also interesting to note that 1 lb. of dried milk is equivalent to about a gallon of liquid milk.

Apart from its protein content, milk contains valuable mineral salts, which again are easily assimilated. It should be understood, however, that milk is **not** a source of Vitamin D, and in consequence does not give any protection against rickets.

In addition to the main ingredients normally found in poultry mashes, there are a limited number of other ingredients included for special purposes and in comparatively small quantities. Among these the following are the more important ingredients:—

COMMON SALT: Although if fed in quantity, say, above 2 to 3 per cent., common salt may be injurious to poultry, in small quantities, namely 1 per cent., it is very beneficial to both young and adult stock. Common salt is included in mineral mixtures at the rate of 1 per cent. by weight of the total mash in both chick and adult mashes, but one of its main values rests in the fact that it aids the bird to more easily assimilate other minerals included in these mashes. Put briefly, common salt is of greater value in aiding digestion than as an actual mineral requirement of the bird.

When used, it is essential that common salt be well mixed into the mash and care be taken not to include lumps. These lumps will be picked out by birds, and this gives a somewhat concentrated amount at one time —an occurrence which may lead to trouble.

LIMESTONE FLOUR: It is a well recognised fact that lime is required for bone formation in growing stock and shell production in laying birds. For this reason it is customary and desirable that approximately 1 per cent. of a raw material containing a high proportion of calcium carbonate should be included in both rearing, growing and laying mashes. A good quality ground limestone is an excellent source from which to supply this requirement.

Source of Lime

OYSTER SHELL: As it is well known, oyster shell is another excellent source of lime and can be said to be one of the best for egg-shell production. An interesting figure sometimes quoted is that 1 lb. of oyster shell contains sufficient lime to shell seven to eight dozen eggs.

Oyster shell dust can be thoroughly recommended for use in mashes fed to rearing and growing birds as their main supply of lime.

BONE FLOUR: The main purpose in feeding bone flour is to supply phosphates, which are particularly required for bone formation in young growing chicks. Bone flour does not provide a source of lime to be compared with either limestone flour or oyster shell. Furthermore, in New Zealand, where large proportions of the rations fed to poultry are made up of wheat and wheat by-products, bone flour ceases to be of major importance, since all forms of wheat contain mineral salts rich in phosphates. It can, however, be used in limited quantities (½ per cent.) in rearing mashes with some advantage.

A note may be added here stating that there is ample evidence to show that complicated mineral mixtures are not a necessity for poultry. The foods normally fed to poultry contain sufficient supplies of the remaining minerals not included in those referred to above.

COD-LIVER OIL: Cod-liver oil is a rich source of two vitamins required by poultry—namely, Vitamin A and Vitamin D. Fresh green food and maize are also valuable sources of Vitamin A, and under normal circumstances it is not necessary for poultry keepers to add cod-liver oil to their adult mashes solely for the purpose of increasing the available supplies of Vitamin A. In bad winter weather or in dry weather, if green feed is scarce, then the addition of cod-liver oil to supply Vitamin A is an advantage. One per cent. cod-liver oil has also been proved to be of value for breeding stock, since some of its benefits are passed on to the young chicks.

The main value of cod-liver oil to poultry keepers is in its use as a source of Vitamin D for chicks that are not exposed to **direct** sunlight. Its inclusion in a rearing mash provides protection against rickets and furthermore it must be realised that there is no other source of Vitamin D vailable to the poultry keeper. The use of milk and green food **is not a means of protecting ch cks** against rickets as is sometimes supposed.

Vitamin Content

Poultry keepers are warned that it is impossible by inspection to observe whether an oil contains vitamins or not, and for this reason when purchasing cod-liver oil an attempt should always be made to obtain a statement as to the vitamin content. A satisfactory oil for chickens should contain—

(a) Not less than 100 units Vitamin D.

(b) Between 800-1,000 units Vitamin A.

An oil of this quality may be used at the rate of 2 per cent. of the total mash or approximately 2½ pints of oil to every 100 lbs. of mash. No advantage is gained by using more than this amount of oil, and if the chickens to be fed receive some direct sunlight, then the amount may be reduced to 2 pints per 100 lbs. with safety. Particular care should be taken, however, to mix this oil into the mash evenly, so that every chicken stands an equal chance of receiving an adequate supply of oil. Mash containing th s oil should not be exposed to the air more than is necessary and should be stored in a covered bin if possible.

The final article in this series on the feeding of poultry will be published next month, when the quest on of mixing mashes and formulae of mashes for birds of different ages will be fully discussed.

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Drafting for Lambing

By a Member of the Kaukapakapa Club.

THE method of raddling rams at tupping, suggested by the Lincoln Agricultural College, in order to bunch together ewes close to lambing for closer supervision, calls attention to another method which can be put into practice immediately. This method is practised by a number of sheep farmers, but is not as generally known as it should be. It has many advantages over ram raddling, chief among which is the ease of application and comparative absence of supervision at tupping time, when most farmers are very busy.

The ewes are turned out with the rams according to the usual practice, and when the earliest lambing ewes appear to be almost on the point of lambing, all the ewes are brought quietly into the yards and put through the crush pens. The shepherd can then work his way carefully through the standing ewes with an assistant and mark lightly on the rump those which are close to lambing, i.e., those whose udders can be felt to be well filled. Those ewes which are more distant, but which are obviously in lamb can be marked on the head. The ewes may then be drafted into three mobs—(1) the forward ewes, (2) those not quite so near, and (3) ewes not yet showing in lamb.

The ewes close to lambing can be driven away to a convenient lambing paddock or paddocks where there is short fresh feed. After lambing it is a good method to dodge out the ewes with their lambs if the choice of good lambing paddocks is limited, as is the case on many farms. The paddocks can be filled up with the second mob when needed.

The ewes not showing up can be kept with comparative safety and little attention on back paddocks until there are more ewes showing up. The yarding, etc., can then be repeated. It is seldom necessary to bring the ewes in more than three times, except perhaps for a final sort-up of the dry ewes, if the rams have been left out until after crutching.

A Good Practice

This incidentally is a good practice where green feed is available for later lambs in October and November, as under methods of single mating it has been noticed that ewes carrying a few dags at the end of the tail are very difficult for the ram to fix. After crutching, these ewes are fixed quite easily.

The "uddering" procedure has most advantages of ram raddling, and several, in the case of the rough country farmer, which the latter method does not possess.

It would be a most difficult job for bush country farmers to muster their ewes every sixteen days under present conditions. The failure to raddle one of the rams which might have been missed in the muster would seriously upset things at lambing. By "uddering" the ewes this work is cut out.

The raddled ram usually succeeds in plastering the first few ewes he locates with a most vivid display of colour, and after other rams have had a go these ewes are not a sight to give pleasure to a farmer who is careful about his wool. Furthermore, it would take a fair amount of a different coloured raddle to show up on these ewes if they missed on the first time round. By yarding the ewes before lambing very little raddle need be used, and if the farmer has objections to raddle on his ewes so near to shearing, the distinguishing marks can be applied on the nose with different coloured raddle.

If it is desired to pick out the dry ewes at the end of tupping, this can easily be done by raddling aproned rams and turning them out with the ewes for about twenty days.

Pick a Dry Day

Both methods entail yarding of the ewes for drafting, and providing reasonable care is taken no ill effects are ever noticed among the ewes. It is advisable to pick a dry day, as the handling of ewes in a muddy yard is an unpleasant business.

The drafting-off of close to lambing ewes is an excellent way to conserve feed on the lambing paddocks, as the dry and late lambing ewes can be safely run on wet or rough paddocks where lambing would be impossible. In days of rationed phosphates it is a method of keeping the dry ewes off

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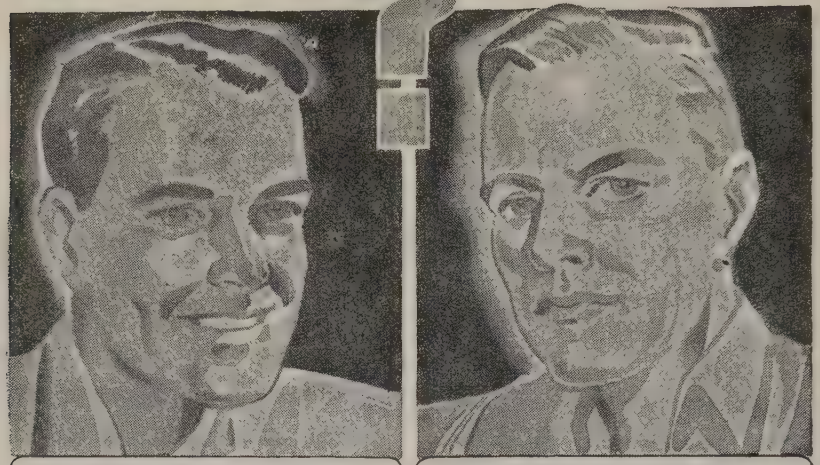

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.J.A.

the topdressed country and seeing that the lamb gets the best available feed. To the hill country farmer with few easy paddocks it can be especially useful and remunerative.

It is surprising how few really dry ewes there are when the sorting up is completed, and how many ewes lose their lambs through one cause or another. By concentrating the forward lambing ewes in handy paddocks it is possible to give them close supervision and cut down these losses to a minimum.

Management

It is in the period of about a fortnight before lambing that most trouble with bearing or sleepy sickness occurs, and by the judicious management of these sorted ewes it is possible to alleviate these troubles. Under the common procedure of putting all the ewes on lambing feed, under favourable conditions of pasture growth, bearing trouble can be a serious source of loss, and under conditions of severe pasture shortage, sleepy sickness can be also a serious loss. The unfortunate part is that, as a rule, most of the ewes lost are carrying twins.

By the selection of a paddock, preferably hilly and on a sunny slope, and by keeping the feed down to a short lawn-like length, the ewes are forced to exercise to feed, and if the lambed ewes are dodged out the resultant daily movement of those ewes which have not lambed will reduce bearing trouble surprisingly.

If feed is very short and sleepy sickness has developed, it is always noticed that the trouble will cease when ewes are shifted to fresh green feed, as against the dry, hard indigestible stuff they have been trying to eat. Dry ewes and those well off lambing can stand these conditions, and so by sorting the ewes the farmer can handle the

(*Continued on page 53.*)

Reports on Club Activities

WESTERN SOUTHLAND.

Dipton.—Annual meeting. Officers elected: Advisory president, Mr. D. Milligan; chairman, B. Sinclair; secretary, M. Crawford; treasurer, A. W. Mayer. Arrangements for debate; discussion regarding club concert. One new member elected.

Orepuki.—Affiliation fee and Journal subscription passed for payment. Notice of meeting cards to be obtained. Arrangements for lecturer at next meeting. Officers elected at annual meeting: Advisory president, Mr. H. Townshend; advisory member, Mr. S. Young; chairman, M. Young; secretary and treasurer, S. G. Dillon. A field day was held at the Makarewa Freezing Works; this took the form of a visit to the works, where members spent about four hours inspecting the freezing plant, etc. The manager, Mr. Falconer, personally conducted the party through part of the works, and then gave members a free run of the buildings. The activity proved to be very interesting and instructive.

Woodlands.—Annual meeting. Officers elected: Advisory president, Mr. Geo. Stevenson; advisory members, Messrs. J. Lilico and J. Middlemiss; chairman, A. S. Trotter; vice-chairman, H. McKenzie and A. Campbell; secretary, K. Maxwell; treasurer, L. Middlemiss. The sum of £8 13s. 5d. was donated to patriotic funds, £7 13s. 5d. being profit from the Y.F.C. Ball; this left a credit balance of £8 19s.

EASTERN SOUTHLAND.

Five Rivers. — Business meeting. Arrangements for dance.

SOUTH OTAGO.

Clutha Valley.—Arrangements for Annual Ball. Impromptu speeches by members.

NORTH OTAGO.

Enfield.—Annual meeting. Officers elected: Advisory president, Mr. F. Mulligan; chairman, A. S. Helliwell; secretary and treasurer, J. Buick. Discussion regarding activities for the year.

SOUTH CANTERBURY.

Geraldine. — Presentation to be made to another member going overseas. Talk by Mr. Blackiston, entitled "Early Days and Personal Adventures in the Chatham Islands."

Waihaorunga. — Annual meeting. Officers elected: Advisory president, Mr. G. Barclay; chairman, J. Barclay; vice-chairman, G. Armstrong; secretary, J. S. Harris; treasurer, C. Davis; Press reporter, A. Armstrong. A discussion took place concerning ways and means of keeping the club active; some very interesting and practical suggestions were made.

MID-CANTERBURY.

Methven.—Discussion on the age limit of members. Short talks by members (own subject). R. Wightman, 1; J. Hyland and J. McKendry, 2, equal.

CHRISTCHURCH.

Darfield.—Lecture by Mr. T. Pearson, on "Bees." At the previous meeting Mr. Ewer spoke on "Sheep and Common Diseases."

MARLBOROUGH.

Flaxbourne.—Annual meeting. Officers elected: Chairman, P. Moran; secretary, J. Forsyth.

NELSON.

Murchison.—Three new members elected and a member who has been away from district re-elected. Circular letter containing message from Mr. D. S. Ross, the Dominion President. A discussion ensued, and several members made some very valuable suggestions, giving their ideas as to how the club could best be kept active

WAIRARAPA.

Alfredton.—Mr. C. Hay gave a very interesting talk on "Sheep Dogs"; the speaker dealt with the care of and, among other things, vices in dogs. He gave it as his opinion that the "all-round" dog was the best proposition for the young farmer to start on. It was decided that meetings should be held every two months on account of the petrol restrictions. Club library to be instituted.

HOROWHENUA.

Levin.—One new member elected. Arrangements for a dance. A talk on "Feeding for Increased Production" was given by Mr. E. P. Neilsen.

MANAWATU.

Bunnythorpe.—Talk by Mr. A. F. McKenzie, an advisory member on his "Travels in America."

Feilding.—Circular letter from Mr. D. S. Ross, Dominion President, was discussed, and all members present expressed their determination to make every effort to carry on the club. Talk by Mr. H. E. Thurston on "Pig Management." Among other things, the speaker dealt with the care of the breeding sow and litter, and also the raising of baconers and the value of feeding minerals to pigs.

Rongotea.—Annual dance to be held in aid of patriotic funds. Talk by Mr. L. L. Marsden on "The Pig Industry."

CENTRAL HAWKE'S BAY.

Tikokino.—Annual meeting. Report and balance-sheet. Election of officers. Talk by Mr. J. W. Palmer, Department of Agriculture, on "The Importance of Wheatgrowing in New Zealand."

TE KUITI.

Otorohanga.—Annual meeting. Officers elected: Advisory president, Mr. H. Evans; advisory members, Messrs. McAdams and Stait; chairman, D. W. McCormick; vice-chairman, C. Murphy; secretary, D. V. Brightwell; treasurer, J. McDowell; minute secretary, M. Shields. There were 23 members present at the meeting.

EASTERN BAY OF PLENTY.

Whakatane D.H.S.—This is a new club, recently formed in the District High School at Whakatane. Starting off with a membership of 14, the club promises to do good work, and should provide material for the formation of other clubs in nearby districts in the future; it presents an opportunity of keeping the movement alive in the district.

WESTERN BAY OF PLENTY.

Paengaroa.—General business. Arrangements made for first round of debating competition. Decided to hold combined field day at Paengaroa on June 13; Te Puke, Pukehina, and Paengaroa Clubs to take part in the stock judging, which will comprise cattle, sheep, and pigs. A demonstration to be given in each class at the end of the judging. Dance to be held, to complete an arrangement with the Paengaroa Hall Society for the coming year. Decided to ask Mr. D. S. Ross, Dominion President, to give an address, at a later meeting, on his "Tour of the Continent of Europe."

Tauranga.—Entries received for ensilage competition. Members expressed their willingness to participate in debating competitions. Vote of sympathy moved to two members in hospital. Lecture on "Lucerne Growing" by Mr. Leveske. Officers elected at the annual meeting: Advisory president, Mr. G. G. Norris; chairman, L. S. Ferguson; secretary, N. T. Murray; treasurer, J. Wright.

Te Puna.—General business. Entries received for the ensilage competition. Mr. E. Gibson answered questions dealing with "The Winter Feeding of Livestock."

AUCKLAND.

Harrisville.—Talk by Mr. L. Bodkin, Tuakau, on "Poultry Keeping."

NORTH AUCKLAND.

Kaukapakapa.—General business. Results of maize-growing competition: H. F. Henley, 1; P. Hildreth, 2.

(*Continued from page 52.*)

forward ewes to advantage, give them the right conditions of feed, and maintain an even growth of wool.

By keeping each draft of forward ewes with their lambs in separate paddocks if possible, when fat lamb drafting time comes much mustering and disturbing of lambs is saved by drafting in the earlier part of the season only from the older lambs.

The writer has had experience of this method over a number of years, and has found it a great saver of time, labour, ewes and good feed.

SUBSCRIPTION RATES.

The *Journal* is issued monthly. The subscription within New Zealand, which is payable in advance and includes postage, is 2s. 6d. a year. The overseas subscription is 5s. Subscriptions should be forwarded or paid direct to any office of the Department of Agriculture in the Dominion. Single copies, price 6d., are available from the Department of Agriculture, Box 3004, Wellington.

Pneumonia—Prompt Treatment is Vital

Contributed by the
DEPARTMENT OF HEALTH.

ONE reason why pneumonia ranks sixth as the cause of death in New Zealand is because the doctor is not called early enough. If every case of pneumonia had proper medical advice and treatment within the first 24 hours, the disease would be pushed lower down on the list of mortal diseases.

Treatment within twenty-four hours of the commencement of the disease is very advisable.

Doctors are constantly trying to impress on people the urgency of taking immediate action when anything goes wrong with their health—of applying what simple remedies they can themselves, and of getting medical advice at once if there is the slightest doubt in their minds.

With pneumonia it is doubly important that the sufferer should get immediate treatment. Pneumonia is one of the most tragic diseases we know. It strikes suddenly, and it may run its course with deadly swiftness if it isn't checked. At midday a man might be fit and well except, perhaps for a slight cold—"nothing to worry about, old chap, just this beastly weather, you know." By midnight that same man might be very seriously ill. Pneumonia can get you just as quickly as that—just as quickly as some of our more deadly poisons.

Danger Signal

Pneumonia has one very characteristic danger signal. It is a sharp pain in the region of the chest, accompanied by a dry cough, and rusty coloured sputum, and it usually follows a cold or a severe sore throat—the sort of complaint that is usually prevalent in the winter and the early spring, when chills are about. These germs lower the bodily resistance and let the pneumonia germ get loose in the lungs.

There are other important predisposing causes. The bodily resistance, which keeps so many danger-dealing germs in check, may be undermined by too much work and too little rest and recreation—a complaint that has a wide currency in these days when labour troubles increase the individual burden, especially on the farm. Lack of the rights kinds of food and chronic alcoholism also tend to weaken the natural resistance.

Very soon after the chest pain is noticed, the patient feels very ill, and then begins to fight for his life—medical skill on the one hand, and on the other a deadly little germ that is causing the lung tissues to flood with pus and matter. If the germ is allowed free play, the lungs eventually clog up completely, and the poor old heart, valiantly pumping blood against this terrible obstruction, finally gives up, and stops.

Wonder Drug

Medical skill has on its side now a wonder-working drug known as sulphapyridine. So effective is this new drug that in most cases, it completely overwhelms the pneumonia germs, and case histories here, and in other parts of the world, show that almost without exception, patients treated adequately on the first day will not die. Your doctor knows all about it, but he must be called immediately any pneumonia is suspected. If it is left too late, then he, with all his skill, and the drug, with all its magic, will be of little avail.

There is just one more thing. Pneumonia is an infectious disease. It attacks young and old. Most people carry the germ in their throats all the time, and, if they keep healthy and well, it doesn't attack. Don't be frightened to spend a day or two in bed if you get a cold or a sore throat.

And remember, if there's any sign of pain in the chest and a dry little cough, drop everything and get the doctor.

Five Health Rules

Here are five rules which should enable you to get through the worst winter with a minimum of sickness and time off:

1. Eat a variety of nourishing foods, including those which are rich in Vitamins A and C, such as milk and milk products; fruits (especially citrus fruits, if you can get them), and tomatoes, preserved or raw; green or yellow vegetables, both cooked and raw; eggs; and liver. If you catch cold easily, you may also need to take cod-liver oil, or some other concentrate of Vitamin A.

2. Get eight hours of sleep each night if possible, and take some form of outdoor exercise daily.

3. Dress according to the weather. Put on adequate wraps when going outdoors instead of wearing heavy underwear all the time. Wear rubbers or overshoes on stormy days. If you get wet, change your clothing, shoes, and hose as soon as possible.

4. Live and work in well-ventilated rooms. The window should be opened at least twice daily for a complete change of air.

5. See a doctor if you have trouble in breathing properly, if you take cold often, if cold hangs on, or if you have a persistent cough.

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THE Good Neighbour

BY MARY

From Me To You

DO you remember the song that is called "The Best Things in Life are Free"? I heard it over the air the other day, and it made me feel very thankful indeed that the best things in life ARE free, especially in these days of couponrationing for almost everything of material worth. Yet the greatest gifts of life are still ours for the taking, and what treasures we have, even if we only count those gifts of every day—sunshine and stars, clear skies or cloudy, and keen winds that make your skin tingle and glow with delight. I think we are a little inclined to take such riches for granted. Emerson wrote: "If the stars came out only once in a thousand years, how men would wonder and adore and preserve for countless generations the memory of the City of God which they had seen." And aren't those words true, too?

Walking is one of the best ways of appreciating all those rich gifts that are ours for the taking. Many years ago a crowd of girls were camping together, and one afternoon we split up into small groups of twos or threes, and went out on a "Treasure Hunt" walk. And after tea, round a glowing camp fire, we told of the treasures we had found in our walk. One had seen scarlet briar berries growing in a ditch; another had found a tall line of golden poplars, and yet another had seen pine trees silhouetted against a sunset sky. We did enjoy those treasures.

Walking can be a cure for so many ills. If you are nervous or irritable, or perhaps if you have a problem to think out, take a walk on your own. It will soothe your troubled mind into a tranquillity undreamed of had you stayed at home and brooded on your worry of the moment. Or if you have an important matter to discuss with a friend, be it business or pleasure, you will find yourself able to discuss matters far more clearly, and more frankly too, if you are walking side by side. Think of the endless possibilities of taking a walk! If you are just plain bored, you could go exploring; if you are tired, but cannot sleep, a walk will stir up the circulation, and bring sleep to a weary mind; and a walk, brisk and long, will keep your figure in trim—if you are wise, you will make sure, before you take a long walk, that your shoes are comfortable, and your clothes are suitable.

Beauty is ours for the seeking, and the taking. Store it up in your mind when you find it, and it will be yours always, ready to refresh you again and again. Maybe here in the city we have more roads to explore than you have in the country, but our roads are not roads of beauty, and we cannot leave the hard paths for the softer ones of grass and meadow. But our skies overhead are of the same deep blue, and our sunshine is as bright, and our walking does us as much good as yours, except that you have so much more beauty for the taking.

Next time you feel tired of living, take a walk.

Mary

Mary's "At Home"

BEING sick in hospital at the time, I was unable to relate my strange impulse, but since then I have read the entries with much interest. No one has the impulse that is mine! The mercury that runs round the electric meter has a strong fascination for me, and I always want to stop its ceaseless run every time I switch on my iron, or the separator. Needless to say, I will refrain from such a foolish idea, but as sure as I stand and watch it, again the impulse is there.

Your letter regarding a sense of humour recalls a pretty little autograph in my book:

"Laugh a little, smile a little,
Whistle and be gay;
Laugh a little, smile a little,
Help another on Life's way."

Mrs. Vee, Waikato.

THESE days, when it is a greater effort to get away for a holiday, due to pressure of our extra duties, I do think we appreciate more fully when we are

Out in a deluge . . . dry as a bone

When the air has turned to water, and arrows of rain come pelting down . . . a Rainster's in its element. (So is the youngster in it.) Impervious to those arrows as the hide of an elephant. Not a drop gets through that English water-tested fabric, not a breath of wind or cold. Seams are sealed with waterproof taping; and there's a grand wrap-over in front. Put the kiddies in Rainster's care for the winter. They'll weather all weathers with Rainsters. And smartly . . . in raincoats tailored the inimitable Rainster way. See them in the shops — now!

OUR WAR-WORK MUST COME FIRST

If in spite of all, a Rainster still eludes you please remember that our resources are now contributing to the country's war effort. You realise the importance of that. So try again. A Rainster will repay the effort.

PUT THE KIDDIES IN RAINSTER'S CARE FOR THE WINTER

able to take a holiday. And I would definitely stress the fact that one and all need a let-up now and gain, and we owe it to ourselves and families to have it. It makes me very sad when I see overburdened women (and men, too) carrying on year after year, and in many cases health has gone to the wind, and when the let-up comes it entails a colossal amount of sacrifice which might have been avoided had the victim found fit to take things more serenely. — **Roundabout, King Country.**

WELL, "M.W.," of Matamata, you are a woman after my own heart. There is a movement in the world today called not "Kindness First," but "Cruelty Last." I should like to belong to that club. When people attack a child's skin because they are too lazy or too stupid to train its mind or soul, it is time they joined such a club. Hats off to you, "M.W.," and to all like you.—**Alter Ego, Clinton.**

I JUST must tell you what a difference you have made to the "Journal." Before you arrived, our "Journal" would came, and very seldom did I ever look at it, but now, my word, it is a different story. It is always opened before my letters! In my last letter I told you of my hopes of getting an electric lawn-mower, but like many other things, they are unobtainable at present, so I can still see myself keeping thin at the expense of the lawn. Funny how we all want to keep th'n, or be thin, isn't it? I had a friend here lately who was unravelling a jersey and knitting it up into a cardigan, because she said a cardigan would make her look slimmer. I had never thought of it like that, and as I was doing a jersey for myself, but hadn't done the front, I decided to turn it into a cardigan, just to appear a bit thinner than I am, although my young daughter thinks I am just right. She said to me the other day, "I wouldn't like to grow up fat like Mrs. S." And I replied, "Well, she is a very nice lady, and as long as you are good and kind, that's the main thing."

"Yes," she said, doubtfully, "but I'd rather be just nice like you, instead of fat."—**Judith, Oamaru.**

I DID enjoy your letter in the May issue, for our lives are very much like roads, in that we know not what is round the corner, and it is best so, for if we knew what our future held we would be fearful of it at times, so I believe in making the most of the present. I am sorry I have not had any brainwaves re substitutes for elastic—"Plain Jane" will not be the only one who is anxious to hear of a way out of this elastic problem. I was cheered, however, by a friend reminding me a month or so ago, after the arrival of her second son, that if he had been a girl there would have been elastic needed for bloomers, but as it was a boy, his trousers would need only buttons. That is one consolation!—**Bluebell, Waitohi.**

READING through the contributions to "My Dream Kitchen," "Rainbow" mentions an old-fashioned couch, where she can relax when the opportunity offers. I glanced round my kitchen, and there was my old colonial couch. I don't think a day has passed during the whole of our married life when it has not been used. Himself frequently stretches out on it after a hard day out on the farm; my own weary limbs have found it welcome and restful. The children romp on it. It has a wire spring, and well-filled squab, so it has often been used as a shake-down when accommodation has been stretched beyond the limit. Each kiddy, as it arrived, learned to kick its little legs on it, and when turned around back to front, my couch makes an admirable play pen. A new cover of tapestry or cretonne brings it back to its original freshness. Second-hand when we bought it from a friend, but in good condition, and costing only £2/10/-, has any other reader such a useful piece of furniture that cost so little?—**Bryn Mawr, Aramoho.**

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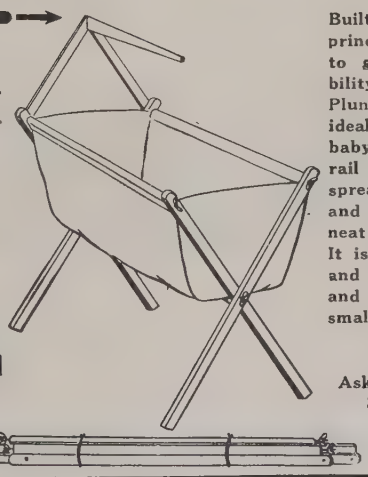

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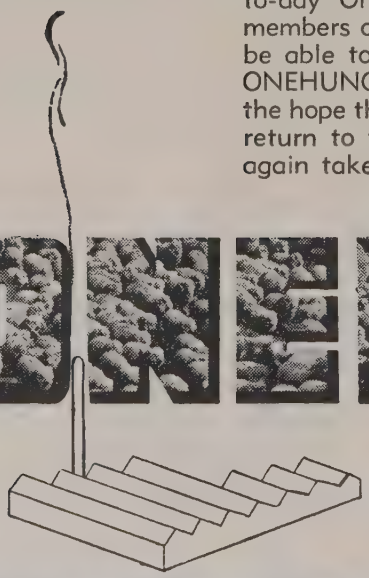

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Our Competition

Wartime Substitutes

THIS competition produced some very good and original ideas, and I am sure you will all agree with me that "Faith Steadfast," of Timaru, well deserves first prize, for her entry was just full of originality. Second prize goes to "Lady Jane," of Wellington. The old saying, "Necessity is the mother of invention," was never truer than it is today, and here goes for some bright ideas.

First Prize

WITH many necessities becoming scarce, and others impossible to obtain, the housewife must exercise all her ingenuity to overcome these new difficulties. During the past months I have tried many substitutes—some alas, have been sad failures—but most of them have been surprisingly successful. When sugar was rationed I decided to try a recipe for jam which requires no sugar, and is made from beetroot and figs. Here is the recipe. Chop the figs into small pieces, and slice the beetroot thinly. Cook the beetroot first, in just enough water to barely cover; when it is tender, add the figs, and the juice of half a lemon to every pound of combined fruit. Cook until the water is almost gone, and the fruit can be mashed to a pulp. To every 2 lbs. of pulp add one packet of red jelly crystals which will set the jam; the figs and beetroot are sweet enough in themselves without the use of sugar. It is really delicious. The shortage of elastic is a great problem. It is still possible, however, to obtain unlimited quantities of shirring elastic, and I have been using this for the legs of bloomers. Machine one row on the edge of the hem, and another row half an inch in. This makes an excellent finish, and does not shrink. Have you noticed also that cards of mending cotton for repairing stockings are fast disappearing from the shops? I have been buying skeins of stranded embroidery cotton in shades of fawn and light tan for this purpose, and find it cheaper, and just as effective as the orthodox mending cotton. Dress preservers are also scarce, and the present rubber shortage will soon put them off the market altogether. I have overcome this difficulty by taking the pattern from an old one, and then making them of several layers of old soft thin sheeting. They are a great success, and have the added advantage of being able to be boiled. And here is an idea for lighting your fire without paper. Procure a piece of pumice stone, and tie a piece of wire round it, leaving about a foot to act as a handle. Place this in a small, deep tin, cover with kerosene, and leave until it has absorbed all that it can take. Put this under the kindling wood, light, and your fire will soon be blazing. As soon as the fire is going well, remove the lighter. This same piece of pumice will last for months. Rubber hot water bottles are unobtainable now, but have you tried a hot sand bag? Make a bag about the same size as a rubber bottle, from any strong material, and fill it with sand. Place this in the oven until thoroughly heated, slip into a cover, and use as a substitute for a hot water bottle. It will keep hot for hours, and in an emergency, which we hope will never eventuate, it can be used on an incendiary bomb.—**Faith Steadfast, Timaru.**

Second Prize

WHAT a world of adventure lurks in the words "Wartime Substitutes!" With no material available for making my favourite bath salts, I buy some fine oatmeal, mix with any scraps of scented soap available, and sew up in small muslin bags. An economical substitute for sandwich pastes is to heat two or three tablespoons of best dripping, and when nearly set, add a good teaspoon of meat extract. This is popular on toast at breakfast time.

The Columbia star, Irene Dunne, believes in looking gay on wet days, for her raincoat turns back to show the vividly-coloured check lining.

I read a week or two ago that Lord Woolton was begging the English people not to waste even the parings of vegetables. So I pared that day's vegetables (potatoes, swedes, carrots, and the outside leaves of cabbage), minced them, added a cup of boiled rice, and a preserved egg, with plenty of pepper and salt. As small flat cakes fried in smoking fat they resulted in a nourishing meal, and the family clamoured for more! Wanting some pink earrings to match my evening frock, I gave my pearl ones a coat of nail varnish, and some remover restored them to pearl again when I wanted them that way. To make warm knickers, I used two men's winter singlets I had. I turned them upside down, stitched double pieces across the neckline to form the crutch, and the armholes became the legs. Shirring elastic stitched along the top completed two warm and serviceable garments.—**Lady Jane, Wellington.**

YES, Plain Jane, I can help you with your elastic problem. You can either go back to the old-fashioned idea of deep bands, shaped to fit the figure, with two buttons at the sides, and no elastic at all, or substitute your elastic with lengths of the required width cut from old bicycle or motor tyre tubes, but be careful not to have too many patches on the length.—**Bink, South Canterbury.** (And judging

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From the sick and wounded comes an appeal for help which no true woman could fail to heed. She answers nobly — giving herself cheerfully to a work which tests endurance and courage, and takes no account of weariness or nervous strain.

Just one of a multitude of ways our women are taxing their strength in their country's service. Overtaxing perhaps — unless they've discovered the blessing of a Berlei and the well-supported figure! The contribution to health a Berlei makes is being proved as never before. The comfort of that back-and-abdomen support . . . that balanced posture . . . through the long hours of duty! You'll do double your duty, with the help of Berlei!

Berlei
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by the number of you who suggested using bicycle or motor tyre tubes as a substitute for elastic, I am sure it must be a very successful substitute.—**Mary.)**

FOR years I have used the same elastic in blouses by fastening with a tiny safety pin, instead of sewing the join. Before washing the article, just withdraw the elastic. It only takes a minute to put in again, and it is the washing that ruins elastic. When buying sheets, buy a double one, instead of a pair of single ones. Cut in half down the middle, and you have a pair, and you only use 5 coupons instead of 7. My husband has to have several pairs of working trousers every year, and as he only wears the front of the legs, I slit the side seam open, take the back of the legs of one pair, and put a new front in the legs of the other pair.—**Biddi-Jan, Redcliffs.**

LINOLEUM is scarce, and a good substitute is to paste paper all over the floor—newspaper will do, but brown is better—let it dry, then paste wallpaper over it. When it is quite dry, put a coat of clear varnish over it, and polish in the usual way. It will last for years.—**L.C.M., Invercargill.**

MANY of my stockings have good legs, but the feet are worn out, and so I cut out the soles by the seams, and resole them. It only takes a few minutes on the machine, and is better than darning.—**Economical Mum, Otago.** (And she has sent me the pattern for resoling stockings, so if any of you would like it, just let me know, and I will send it to you.—**Mary.)**

IN place of mustard, which is unprocurable here, put garlic and horse radish minced up fine in double quantity into your pickle, and with this pickle your men folk will not miss the mustard with cold meats. Or you can just use minced horse radishes mixed as mustard when needed.—**Careful Nanna, Riwaka.**

I USE cold tea for making steam puddings, ginger biscuits, and ginger cakes instead of milk. It makes them a rich dark brown. I also clean my stove with cold tea on the black lead, and it makes a brilliant shine.—**Mrs. A.A., Lauriston.**

WHEN knitting socks, try knitting the heel and sole in one part, and front and toe in another, leaving a sewn seam along each side of the foot, which can be easily undone when re-knitting the foot, thus saving a skein of wool.—**J.F., Otara.**

Competitions

JULY

Just a reminder that this month's competition, the subject of which is "The Most Amusing Incident in my Life," closes on **August 15th.**

AUGUST

Peace Is Declared

WHAT joyful words they are going to be, when victory is ours. And what celebrations there will be too! What are YOU going to do the day peace is declared? I am tired of this black-out, and my way of celebration is going to be to light up every room in the house, and leave up every blind. And you will all have your own ideas too, I know.

Two prizes will be awarded: First 10/-, and second 5/-, so send in your entries before **September 15th to:—**

"MARY,"
C/o "Journal of Agriculture,"
P.O. Box 3004,
WELLINGTON.

I HAVE made excellent tapers, for lighting the lamps, from string. Cut fairly thick string about 8 in. long (if the string is thin twist it together first) and dip into melted candle grease. Soak well, and place on paper to harden. I use a tin plate on top of the stove.—**Matchless, Nelson.**

Please . . . . !

WILL "Patriotic," of Cambridge, prize-winner in last month's competition, let me have her real name and address?

E.M. wants to know if any reader can let her have a simple recipe for making cheese at home. And another reader would like to know if any one could let her have a plan for making a hand loom to weave material about 30 inches wide.

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Mary's Mixing Bowl

Favourite Recipes

THE prize of 2/6 for the best recipe is awarded to "Biddi Jan," Redcliffs, for the following entry.—

A WARTIME CAKE.

1 large cup treacle, 1 teaspoon baking soda, ½ teaspoon mixed spice, 3 cups flour, 2 tablespoons margarine or dripping, 2 teacups hot water, 1 lb. seedless raisins, 1 teaspoon essence lemon.

Put into a saucepan the treacle, margerine, spice, raisins and hot water. Bring to the boil, boil for five minutes, remove from fire, leave until nearly cold. Dissolve soda in two teaspoons boiling water, add to mixture, stir in flour and mix well. Bake 1½ to 2 hours, in a slow oven.—**"Biddi Jan," Redcliffs.**

BRAN LOAF.

1 cup flour, 1 cup bran, ¼ cup sugar, 1 cup milk (scant), 1 cup raisins or dates, ¼ teaspoon salt, 2 teaspoons baking powder, 2 tablespoons golden syrup, 1 tablespoon butter.

Sift flour, salt and cream of tartar or baking powder. Add bran, sugar and dates. Melt the syrup, butter, soda and milk; mix to a fairly stiff dough. Bake in a greased tin about one hour.—**"Brynmawr," Aramoho.**

WINTER-NIGHT TEA.

1 lb. mince (beef), 2 large onions, seasoning, 1 cup breadcrumbs, ½ cup suet, 1 cup flour, 1 teaspoon baking powder.

Put mince, seasoning and chopped onion on to boil with water, then simmer till onions are cooked. Mix breadcrumbs, suet, flour and baking powder to stiff dough with water, cut in small bits, drop into mince, and thicken before serving. Serve with hot mashed potatoes.—**"M.," Feilding.**

COCOA-DATE SCONES.

2 cups flour, 2 teaspoons baking powder, 1 tablespoon cocoa, ½ cup chopped dates, 2 tablespoons butter, milk, 2 teaspoons sugar.

Sift flour, add dry ingredients, stir in melted butter, and mix with milk.

Your Best Recipe

A CASH prize of 2/6 is awarded each month for the best recipe sent to the "Mixing Bowl." Send your entry in before **15th August** for this month's competition.

Cook in quick oven. Serve hot with butter (also delicious with raspberry jam.)—**"M.," Feilding.**

WESTMINSTER BUNS.

1 lb. flour, ½ lb. butter, 2 teaspoons baking powder, 6 oz. sugar, 2 oz. sultanas, little lemon essence, pinch salt, enough milk to mix stiff dough.

Rub butter into flour, add sugar, essence, salt and sultanas and mix with

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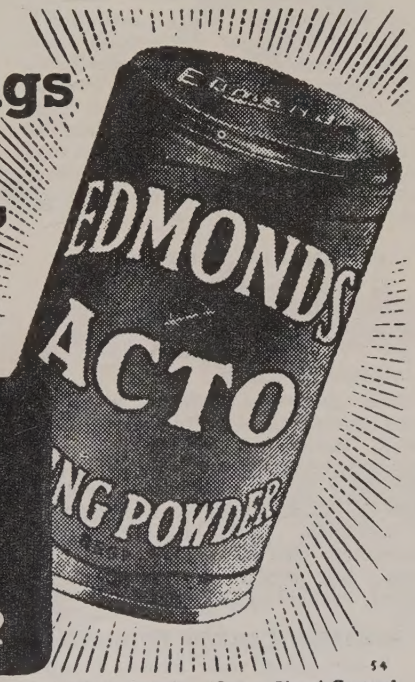

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milk. Shape into small buns. Bake on cold greased tray, 15 to 20 minutes. Sprinkle with icing sugar.

CINNAMON SCONES.

3 cups flour, 1 oz. butter, 3 teaspoons baking powder, 1 egg, teacup milk, 1 tablespoon sugar, 2 teaspoons ground cinnamon, ½ teaspoon salt.

Rub butter into flour, salt, cinnamon and baking powder. Lastly beat in egg and milk. Bake in quick oven.

GOLDEN SYRUP DUMPLINGS.

Rub 2 ozs. butter into 2 good cups flour, pinch salt, 2 tablespoons baking powder. Beat one egg with enough milk to form a firm dough. Divide mixture into balls and drop into boiling syrup. **Syrup.**—2 cups water, tablespoon butter, ¼ cup sugar, 2 tablespoons golden syrup. "With lid on pot" boil 15 to 20 minutes.

CHEESE CREAMS.

Melt 2 tablespoons aspic jelly (or soup jelly made from bones) and when cool but not set whip it with 2 tablespoons of cream till thick and frothy. Add ½ cup grated cheese, with pepper and salt, pour into tiny paper cases, and decorate with stuffed olive or gherkin.

ORANGE BALLS.

Beat thoroughly 4 eggs, add slowly 4 tablespoons sugar, ¼ teaspoon salt, vanilla essence. Sift into mixture 2 cups flour, 1 teaspoon baking powder, and the juice of 2 large oranges. Have ready deep pan of boiling fat, and for each ball drop 1 teaspoon of mixture. When cooked lift with a strainer, dredge with castor sugar, and serve hot.

CREAM OF CELERY SOUP.

1½ cups chopped celery, 1 teaspoon salt, 2 cups celery stock, 2 cups milk, 4 tablespoons flour, pepper, 1 teaspoon onion juice, 2 tablespoons butter.

Cook the celery in the boiling water until quite tender. Rub through a sieve. Return the celery pulp, and two cups of the stock to the saucepan. Mix flour to a smooth paste with a little of the milk, add rest of the milk to saucepan. Add onion juice and seasoning, and then stir in the flour paste. Stir until it thickens. Add the butter, and serve at once.

STEAMED CARROT PUDDING.

1 cup grated raw carrot, 1 cup grated raw potatoes, 1 cup brown sugar, 1½ cups flour, 1 cup seeded raisins, 1 teaspoon soda, ½ cup butter, 1 teaspoon salt, 1 teaspoon cinnamon, ½ teaspoon cloves, ½ teaspoon grated nutmeg.

Mix and sift the dry ingredients, and mix with the other ingredients. Butter one large or several small moulds, dredge with sugar, and fill each mould about two-thirds full. Cover moulds, and cook either in boiling water or in a steamer. A large mould will take 3 hours.

BEEF STEAK PUDDING.

Cut into dices 1 lb. lean beef steak, add 1 teaspoon salt, and dash of pepper, sprinkle with flour, add 1½ cups cold water, 1 chopped onion, 1 tablespoon chopped parsley, and simmer gently 1 hour.

To make green pea crust take one cup flour, pinch of salt, ¼ lb. butter, 1 teaspoon baking powder, 1 large cup boiled fresh peas, strained and drained. Mix all together, and add milk to make a stiff dough. Line pudding bowl with this, and leave enough for the cover. Add the cooked steak, then the rest of the crust, and make a vent in top. Steam gently 3 hours, and serve with mashed potato and one onion mashed in.

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